

THE MINING CONGRESS JOURNAL

JULY, 1917

VOL. III

SAFETY-EFFICIENCY-CONSERVATION

No. 7



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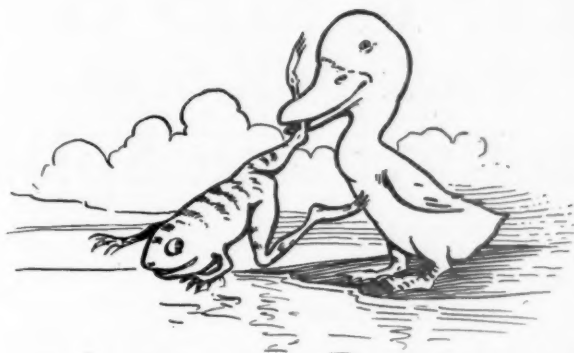


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JULY

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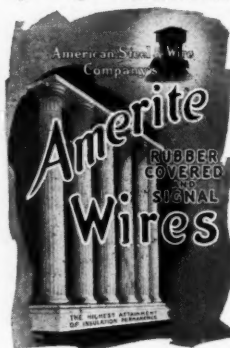
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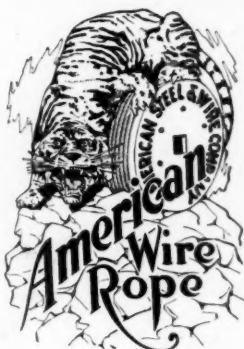
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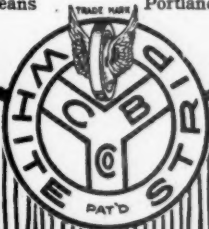
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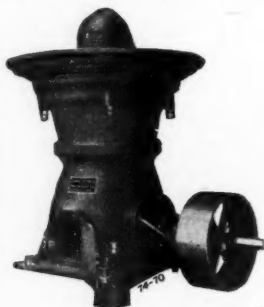
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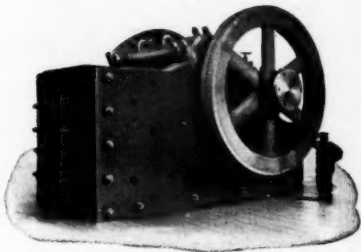
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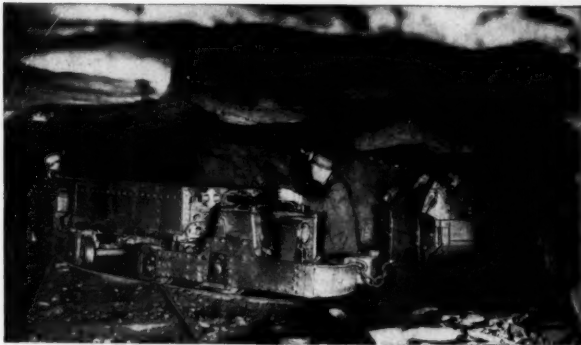
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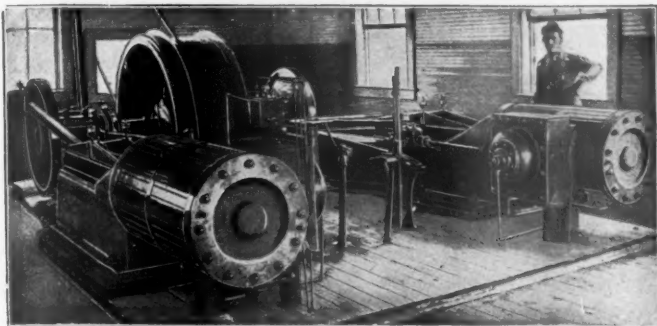
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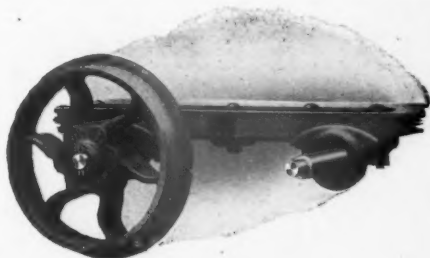
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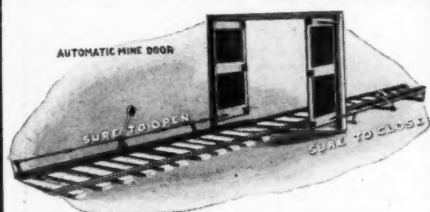
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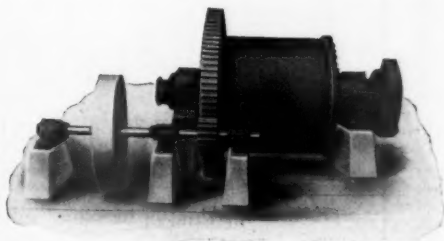
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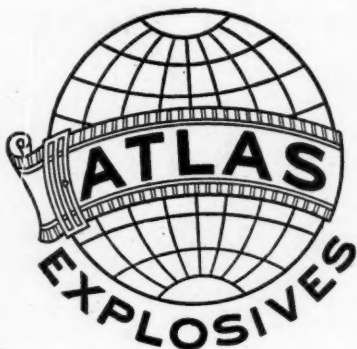
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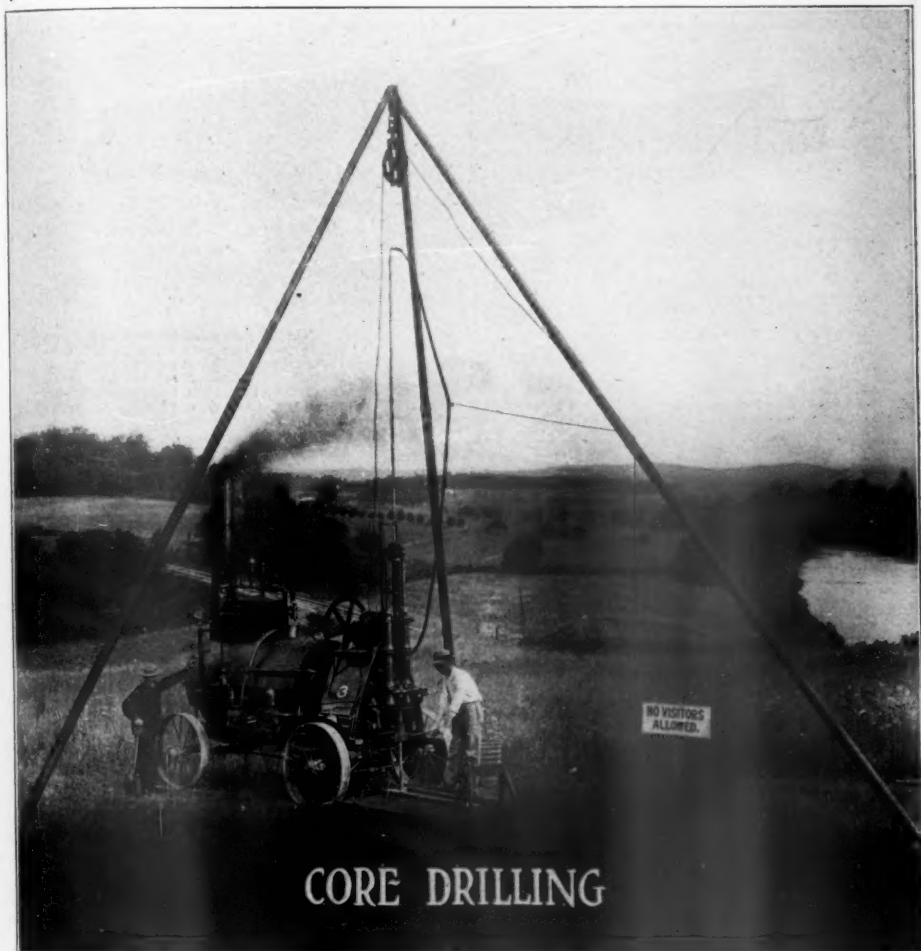
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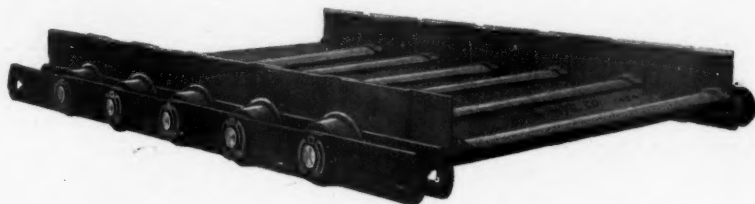
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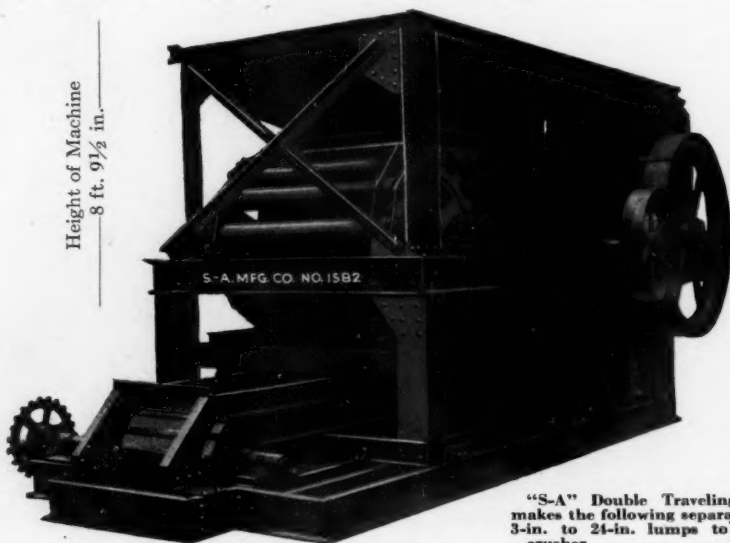
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THE MINING CONGRESS JOURNAL

Official Organ of the American Mining Congress

GOVERNMENTAL PRICE FIXING

In these strenuous times there is much public demand for the governmental regulation of prices. Some advocate the fixing of minimum prices in order to stimulate production, and others the fixing of maximum prices in order to protect the public.

Both are wrong in principle and both will be found wrong in practice. No other law than that of supply and demand in a fairly competitive market can ever be relied upon to protect the public.

The vital question of food regulation in the absence of monopolistic control will adjust itself. If speculative control of food supplies is attempted, then the Government should exercise its emergency right to commandeer the controlled supply and fix the price to be paid therefor, giving to the speculator the option of accepting the offer or of presenting his demand to the Court of Claims.

THE MINING CONGRESS JOURNAL does not believe that more drastic laws are necessary and that in the absence of speculative control the price question will adjust itself.

THE BUSINESS OF GOVERNMENT

The American Mining Congress believes that the business of government is to govern just so much and no more than is necessary to protect its citizens in the rights guaranteed by the Constitution; that it should create and maintain those conditions under which its citizens may create property which it may draw upon to enable it to perform its governmental functions. Whatever fields it

occupies, which are not necessary to the performance of those functions, are fields of danger.

It should protect the humblest of its citizens against the encroachments of all others. If a few citizens by any means obtain so great a part of the wealth of the country as to interfere with the "pursuit of happiness," to which every citizen is entitled, it can and should equalize conditions through the power of taxation.

It may do all of those things which are necessary or convenient for the purposes of government, but it should not go into business in competition with its own citizens.

If a business is a necessary monopoly and a necessity to the public welfare, the Government must decide whether to regulate or to operate. If it decides to operate, it should, by purchase, eliminate those who have interests in such business, but it should not compete in business with its own citizens.

JUSTICE FIRST TO THE CALIFORNIA OIL CLAIMANTS

The vicious unwisdom of the present day tendency to discourage western development in obedience to the demand of the so-called conservation movement has never been more strikingly illustrated than at the present time, when the present world demand for gasoline is so great and the sources of supply so limited.

A still more startling situation would have menaced the country had this movement acquired its greatest power a few years earlier and before the development of the oil resources of California,

Wyoming and other western points had been undertaken by those whose rights to the benefits of their investments are now being seriously questioned. There are some who would completely confiscate those rights in order to establish a Federal naval oil reserve.

It is not proposed to question the desirability of such reserves, but we insist that rights, guaranteed by our National Constitution and by every principle of honesty and fair dealing, should not be sacrificed to accomplish that purpose. If the United States Government, for any governmental need, wants property which belongs to its citizens, its right under the Constitution to acquire such property is undoubted.

If the Government needs a site for a public building, it purchases that property upon the best terms possible and without resort to its rights of eminent domain, and yet the owners of post-office sites did not sink a drill hole two of three thousand feet into the earth in order to find out whether the land had any value; the owners of such property took no special risk in acquiring it.

The owner of an oil well in California or elsewhere did take enormous risk in proving the value of his property and in consequence his rights are entitled to particular respect. These rights in a contest with an individual claimant would be entitled to a hearing in court; to a judicial determination. In a contest with the Government, the claimant cannot demand a hearing in court; he is bound to accept whatever his Government sees fit to allow.

Because of this anomalous situation it ill becomes those in power to ruthlessly override every plea for justice. The California oil claimants have had their millions of dollars of investment tied up so long that they are now willing to accept a lease upon the properties, which by every precedent should be granted to them in fee.

The American Mining Congress is opposed to a Federal leasing system because it believes with Abraham Lincoln, that the public lands "are an impermanent national possession held in trust for the maturing States." It believes

that the natural resources within the several States should be utilized for the support of those States. It believes that the people of Boston are entitled to the benefit of the Boston harbor; that, while the citizens of other States may have theoretically an interest in the Boston harbor, the property of "all of the people," in order to get any advantage from this theoretical right they must go to Boston harbor in order to use it.

Upon the other hand, if the citizen of Massachusetts deserves to utilize his interest in the water powers of Oregon, the oil of California, or the coal of Wyoming, he must go where those resources exist and take his chances with other citizens in securing the opportunity to develop these resources and to share in the profits or losses which accrue.

Having done so, in accordance with the established rules and the law, he should be protected in the rights which accrue. If a doubt exists as to the legal or technical validity of those rights, that doubt should be construed in favor of him whose risk has demonstrated the value of the property and whose expenditures have brought into existence a product so vital to our nation's present war necessities.

If a leasing system is to be adopted, surely the California oil claimants are entitled to a lease upon the property which their capital has made valuable through development.

The American Mining Congress, notwithstanding its objection to a Federal leasing system, will gladly surrender its opposition rather than to have its Government deal unjustly with any citizen of our common country.

The owner of an oil well in California or elsewhere did take enormous risk in proving the value of his property and in consequence his rights are entitled to particular respect. These rights in a contest with an individual claimant would be entitled to a hearing in court; to a judicial determination. In a contest with the Government, the claimant cannot demand a hearing in court, he is bound to accept whatever his Government sees fit to allow.

Because of this anomalous situation, it ill becomes those in power to ruthlessly override every plea for justice. The California oil claimants entered upon the public domain to prospect for oil under statutes which invited and authorized them to do so, they have spent millions of dollars in the development of what are now valuable oil properties, a part of which have been arbitrarily included within Naval Reserves.

Their rights to the land being disputed, their investments having been tied up so long, and their losses having been so great, that, in order to end the controversy, many are willing to accept leases for land which by every precedent should be granted to them in fee.

The American Mining Congress is opposed to a Federal leasing system because it believes with Abraham Lincoln, that the public lands "are an impermanent national possession held in trust for the maturing States." It believes that the natural resources within the several States should be utilized for the support of those States. It believes that the people of Boston are entitled to the benefit of the Boston harbor; that, while the citizens of other States may have theoretically an interest in the Boston harbor, the property of "all of the people," in order to get any advantage from this theoretical right, they must go to Boston harbor in order to use it.

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THE BURDEN ON GOLD PRODUCTION

At no time in the history of the world has the yellow metal been the cause of more grave concern to economic thinkers and to those charged with the responsibilities of the world's financial problems. At no time have nations felt the necessity of guarding with such severe restrictions their gold chests. At no time in the world history has the production of gold

been conducted under such great handicaps. It is very unusual that general prosperity brings hardship to any particular business, but gold production is the one exception.

The value of gold being fixed every increase in cost of production takes from the profit except where improved methods increase the percentage of saving. For instance: if the cost of labor and supplies and other production expenses amount to \$2.50 per ton and the ore carries value of \$5, a saving of 60 per cent would leave a profit of 50 cents on each ton handled. If the production costs shall be increased to \$3.75 per ton, an increase of 50 per cent, a loss of 75 cents per ton would be entailed unless it became possible by better methods to save a higher percentage of the values. If 80 per cent can be saved a profit of 25 cents per ton would result.

When this illustration is applied to such companies as the Homestake and the Treadwell and other large low-grade operations where the total values of the ore mined are about \$2.50 per ton, the enormous burden of increased operating expenses will be appreciated.

Practically all of the known extensive gold deposits are yielding ore of a gradually decreasing average value. The costs of operation have for years been gradually increasing and during the recent past these rapid increases in operating expenses have been exhausting the profits and in many cases have necessitated the closing down of strictly gold producing properties. There seems to be no possibility that operating expenses can be materially reduced nor that the average ore values will be increased. Assuming this to be true, the future of gold production must depend upon a more complete saving or upon some outside and unusual inducement. Whether such inducement will be provided depends upon whether gold for the nation's reserves is worth more than its intrinsic value in the world's finances.

At the present time the United States is doing a business of many times more than its gold reserves. The banks have on call deposit at least four times as much

as the total amount of money in existence in the country and approximately five times more than the nation's gold reserves. The business of the country is growing so rapidly as to startle the imagination. This will require an ever increasing supply of money. Somewhere there is a limit to the burden of credit which a dollar in gold can safely carry. If we shall exceed that limit, financial disaster will follow the first important financial failure through which public confidence, credit, is substantially impaired.

The panic of 1907 came like a flash of lightning from a clear sky. Business in all lines was never better; all workmen were employed at the highest wages then known; there was no great surplus of supplies in the market. A wild speculation caused the finger of public suspicion to point at the immense structure of credit which rested upon an insufficient base of gold.

To be sure, we now have a more elastic monetary system—a system which may do legally what the banks then did without authority of law. But no system can make it possible for a diminishing gold reserve to continually support an increasing burden of credit. At the time an undue and unusual part of the world's gold supply has come to our shores. The future European conditions will require such a premium on gold as will force large gold exports. At the time the decreasing gold production of this country which must follow present conditions may put gold at such a premium as to stimulate gold production. Would it not be better that a Government bounty upon gold production from low-grade ores shall accomplish this stimulation rather than a premium on gold, or, what means the same thing, a depreciation of our currency?

THE MINING CONGRESS JOURNAL submits this question and believes it worthy of serious consideration.

WEALTH DISTRIBUTION THROUGH WAGES

The greatest problem of statesmanship is the proper distribution of wealth. The method by which this can be done

with greatest benefit to all is through the payment of commensurate wages to the workmen. To accomplish this, employer and employe should work together in harmony. These results should be accomplished without the enormous waste occasioned by strikes and without the bitterness of feeling growing out of contests between interests which should be acting together. The great effort should be for efficiency. When the highest efficiency of production fails to create conditions which do not produce a fair wage and a reasonable profit, an effort should be made to discover and relieve those marketing conditions which absorb too great a share of the price paid by the consumer.

THE MINING CONGRESS JOURNAL believes that the purposes for which strikes are declared should be accomplished by some other method. It recognizes that human selfishness leads to demands by one side or the other for an unjust share of operating proceeds. It will constantly labor to accomplish these purposes in some peaceful and economic way. It will strive for safety and the best conditions for the workman, a fair profit for the operator, a fair price to the consumer and the prevention of waste of our natural resources, for safety, efficiency and conservation.

THE UNITED STATES CHAMBER OF COMMERCE AND THE WAR

The action of the United States Chamber of Commerce, purporting to represent the trade and commercial bodies of the United States, in asking the President to name a special publicity commission to give the people the truth and arouse them to a sense of their duty would be amusing if it were not so serious. In this connection it is announced that the National Security League will send 2,000 speakers throughout the country to give the people the truth. Just think, in a country with the best newspaper service in the world, 2,000 speakers must go out to enlighten the people. Ye gods, and what is the truth which is to be given the people? We quote from the statement sent out by the Chamber:

Aside from the question of shortening the war there are life-and-death reasons why the United States should speed preparations for the great conflict. There are possible and even probable contingencies, which might cause the United States to bear the brunt of the fighting on her own shores. These are:

"If Russia should collapse.

"If the British fleet should be overcome.

"If the food situation should bring our allies to their knees.

"If great reversals should be met on the western front.

"If the submarine menace be not checked."

What heights or depths does this august body hope to reach which George Creel cannot attain? Knowing Mr. Creel's capabilities and propensities, we shivered at the announcement that he was to be chairman of the administration's Committee on Public Information, but comforted ourselves with the knowledge that great responsibilities usually make for conservatism. This rule should apply to the United States Chamber of Commerce, but its action in the matter indicates that it does not appreciate its responsibility which should make for conservative action.

What are the facts?

The central powers, entirely prepared, began an offensive campaign, which, after a few months of successes, was halted by the Allies, who began without adequate preparation. After two years during which the Allies, in a large measure, prepared for war, the central powers found themselves unable to advance; unable to maintain a complete defense of their lines; with their sustenance depleted to the minimum of existence; with no hope of getting outside supplies; with defeat certain and imminent; but with one possible avenue of escape, namely, a revolting brutal indiscriminate U-boat warfare against the shipping of the world, of friend and foe alike, in order that by cutting off all supplies the Allies might be brought by immediate starvation to end the war.

Self-preservation, the first law of nature, relentlessly enforced the adoption of the brutal alternative. The adoption of this alternative was sure proof that, from the German standpoint, success or even an honorable peace was hopeless.

If the United States were alone entering a war with Germany and before her three years of devastating warfare, there might then be cause for the wild alarms of the United States Chamber of Commerce. Under present conditions its action seems ludicrous. What do these few gentlemen, who pretend to speak for the business organizations of the country want? The President asked for authority to declare a war. It was promptly granted by Congress. The President asked for a conscription bill. It was passed with unusual promptness. The President asked Congress to provide the unheard of sum of seven billions of dollars. Congress quickly met the request. The public was asked to subscribe for two billions of the Liberty Loan. This allotment was promptly oversubscribed. Ten million men registered for conscription without a disturbance. What more can be wanted?

This war is a grim and serious business. The American people are so considering it and thus far have met every requirement. It requires patriotism and great personal sacrifice. The American people are meeting those requirements most magnificently.

The United States Chamber of Commerce is an organization with inherent possibilities of great public service. It has done some good work; a few such exhibitions of panic stricken inability to comprehend the spirit of the American people will doom its future efforts to failure. The great business public, which it should represent, has a right to demand more mature judgment and more conservative action from those who undertake to speak for this organization and to demand that it shall not misrepresent the judgment and genius of the American people.

CHICAGO MUST GET ALONG ON LESS SMOKELESS COAL

Chicago will receive more anthracite this winter than last but will have to economize on its consumption of smokeless coal during the war. This was the information imparted by the Committee on Coal Production to representatives of Chicago retailers recently.

COAL PRICE FIXING PLAN PUT INTO EFFECT AT HISTORY-MAKING CONFERENCE

Operators Agree with High Government Agents on Prices That Will Save American Consumers no Less than \$100,000,000 during Remaining Six Months of 1917—Secretary Baker Objects to Arrangement

While the action of Newton D. Baker, Secretary of War, in finding fault with the results obtained at the coal price fixing conference held in Washington, June 26 to 28, the plans formulated at that conference will be carried out nevertheless, it is believed. At the conference a schedule of maximum prices was agreed upon and price-fixing committees were selected to act in every coal district in the United States. This action will save the American consumer not less than \$100,000,000 during the remaining six months of 1917, according to an estimate made by George Otis Smith, the Director of the United States Geological Survey. The conference arranged for the formation of a national association of coal producers.

More than 400 coal operators were in attendance and practically every coal-producing district in the United States was represented. Each session was characterized by unusual enthusiasm. The coal operators frequently have been accused of being dollar patriots, but anyone who followed the meetings of the conference saw ample evidence that their chief desire is to help Uncle Sam win the war, regardless of how their personal fortunes may be affected.

Following the drastic report of the Federal Trade Commission, which proposed the pooling of the coal mining and transportation industries, Francis S. Peabody, the chairman of the committee on coal production, saw that quick action must be taken if the government operation of coal mines did not result. He expressed his fear in the following words:

"I want to take this opportunity of saying to the coal men that unless some regulation is made as to the present high price of coal by the coal men themselves, the government is going to step in and do it for them. It is not pleasant for me to say this, but I know what is going to be done. It is much better that we should get together willingly, confer together and confer with the broad-minded men on the Federal Trade Commission and discuss this with our cards on the table, than for some men to be given the authority to tell us the price for which we are going to sell coal, or if it comes to the worst, for some government official to take charge of our mines. I know they will do it if we do not do something ourselves."

In order to see if the industry itself, in co-operation with the Secretary of the Interior and the Federal Trade Commission, could not

insure a lower price of coal and take steps to increase, even further, the volume of production, Mr. Peabody called upon the operators in each producing district to send a representative delegation to Washington armed with figures showing average selling prices in each district for the previous eighteen months, classified by months and as to classes of customers.

The response to the invitation was general, in fact, it brought together one of the most notable gatherings of coal operators in the history of the industry. Even Mr. Peabody himself was surprised at the number who responded. In opening the conference he predicted it would be a historic meeting. He did not foresee, however, that the conference was destined to cause the most serious disagreement that has ever taken place in President Wilson's cabinet. At this time—July 2—it is believed that the President himself will be called upon to decide whether Secretary Lane, Mr. Peabody and Governor John F. Fort, the latter of the Federal Trade Commission, did right in agreeing with the operators on tentative prices which will save the American consumer \$100,000,000 in the next six months; or, whether Secretary Baker is justified in making public views which well might have destroyed the constructive work of the conference had the matter been in the hands of less resolute men. Secretary Baker's letter, which is addressed to the director of the Council of National Defense, is quoted in full as follows:

"My attention has been called through the newspapers to the action reported to have been taken at Washington, D. C., during the past week by the so-called Committee on Coal Production of the Council of National Defense, in cooperation with certain coal producers, and representatives of coal mining enterprises, with regard to the prices of bituminous and anthracite coal.

"The facts seem to be that the Coal Production Committee invited to Washington various coal operators and arranged conferences between them, members of the Coal Production Committee and members of the Federal Trade Commission, leading to the adoption of resolutions in favor of an early and accurate determination of the costs involved in the production of bituminous and anthracite coal, as a basis for some future action by some official agency of the government in fixing fair and just prices for these products, should any such agency be given

power to do so. Pending such an ascertainment of costs this meeting seems to have adopted a resolution whereby the operators present agreed to sell bituminous coal at a price not higher than \$3 per ton, and that this obligation should remain in force until some such action had been taken by an authorized governmental agency.

"The color which has been given to this meeting and this resolution in the newspapers may well mislead the public into believing that the Council of National Defense has either undertaken itself to fix the price of coal, or to sanction its being fixed by the Coal Production Committee, or that committee in conjunction with the coal operators. I, therefore, as president of the Council of National Defense, write this to say that the Council of National Defense has no legal power, and claims no legal power, either to fix the price of coal or to fix a maximum price for coal, or any other product. The Coal Production Committee is a subordinate committee of the Council of National Defense, purely advisory in its character, formed for the purpose of advising the Council as to steps which might be recommended leading to a stimulation of production and distribution of coal. No power has been even attempted to be delegated to it to consider or deal with the question of price, and any action taken by that committee, or sanctioned by that committee dealing with price, either fixed or maximum, for coal is clearly beyond the legal power of the Coal Production Committee and of the Council of National Defense, from which the committee derives whatever authority it has.

"As you are aware, the Federal Trade Commission has been directed by the President to ascertain for his information the costs involved in coal production. I am to some extent familiar with the progress made by the Commission. The information I have from that and other sources, I think, justified me in believing that the price of \$3 suggested, or agreed on, as a maximum, is an exorbitant, unjust and oppressive price.

"The fact that these conferences were attended by members of the Federal Trade Commission and by members of the Council of National Defense, of course, adds nothing to their legal powers, and I am sure that none of my associates in the Council will dissent from the view I have herein expressed, both on the imitation upon the powers of the Council and the Coal Production Committee, and the effect of the action alleged to have been taken.

"I write this for the information of the Coal Production Committee, and for the guidance of all other subcommittees of the Council."

At this writing no defense of his position has been made by Secretary Lane, upon whom the chief reflection of the letter is cast, or by Mr. Peabody or Governor Fort. When the prices had been agreed upon, after much discussion among the operators, they were

adopted at a closed session, at which Secretary Lane and Mr. Peabody were present. Mr. Lane sat at the table with Mr. Peabody and read off the figures to a room full of operators as Mr. Peabody checked them. That the whole procedure met the approval of Secretary Lane is shown conclusively by the following letter sent by Mr. Lane to Chairman Peabody at the close of the conference:

"I have just learned of the action of the coal operators, and I wish to express my appreciation of the generous, prompt and patriotic manner in which they have acted. They have dealt with the situation in the way that I had hoped they would, as large men dealing with a large question. They manifestly see that this is no time in which to consider primarily the opportunities which the war gives for personal aggrandizement. We must gain for each by gaining for all. The country is in a mood for sacrifice. It is intent upon the success of the war and is willing to do everything needed to give insurance to the world against a repetition of this awful condition.

"Will you not be good enough to express to the coal men my appreciation of the spirit they have shown in determining that their prices shall be reduced so that the industries of the country may not feel hampered, and the people may not feel that their spirit is broken down by the thought that this is to be a war for individual advantage instead of self-protection. I felt from the moment of my talk to them that no body of men more truly represented the high purpose to yield personal desire for general good than did they. Now I trust that we shall immediately put into concrete form the spirit of your resolution."

The present prices and the reductions agreed upon are as follows:

Present prices on bituminous coal mined in Pennsylvania have ranged from \$4.75 to \$6. Under the ruling the price is reduced to \$3 for mine run and \$3.50 for domestic lump, egg and nut.

The present range of prices in West Virginia is from \$4.50 to \$6; price reduced to \$3 for mine run and \$3.50 for domestic lump, egg and nut.

The range of prices for Ohio coal has been from \$4.50 to \$5; prices reduced to: No. 8 district, the thick vein Hocking and Cambridge districts, \$3 for mine run and \$3.50 for domestic lump, egg and nut; thin vein Hocking, Pomeroy, Crooksville, Coshocton, Columbiana County, Tuscarawas County, Amsterdam-Bergholz district, \$3.25 for mine run and \$3.50 for domestic lump, egg and nut; the Massillon and Palmyra districts and Jackson County, \$3.50 for all grades of coal.

The prevailing prices in Alabama have been \$5.50 to \$5.75; prices reduced to: Cahaba and Black Creek, \$4; Pratt, Jaeger and Corona, \$3.50; Big Seam, \$3 for all grades.

The prevailing prices for coal mined in Maryland have been from \$5.75 to \$6; reduced prices will be \$3 for mine run and

\$3.50 for domestic lump, egg and nut.

The prevailing prices on coal mined in Virginia have been \$4.50 to \$5; reduced price, \$3 for mine run and \$3.50 for lump, egg and nut.

The prevailing prices on coal mined in Kentucky have been from \$4 to \$4.50; reduced price, \$3 for mine run and \$3.50 for the domestic sizes.

The prevailing prices on coal mined in Illinois and Indiana have been from \$3.50 to \$4; reduced price, \$2.75 for mine run and steam sizes and \$3.50 for screened domestic sizes. Add 50 cents for the long wall district of Northern Illinois, Assumption and Murphysboro.

The prevailing prices on coal mined in Tennessee have been from \$4.50 to \$5; reduced price, \$3.50 for all sizes.

Summing up the saving which will be made by the price-fixing agreement, Dr. George Otis Smith, director of the United States Geological Survey, said:

"The coal producers have blazed a way for cooperative effort between representatives of industries and representatives of the government looking to unity in effectual public service. The maximum prices fixed at the conference mean a saving to the American consumer of no less than \$100,000,000 for the remaining six months of 1917. Based on the percentage of spot coal in the different states and the average difference between last week's prices, as published by Coal Age, amended by reports of actual sales as stated by operators present and on the Survey's estimates of May production, it can be calculated that the reduction in price by the operators would have amounted to \$15,000,000 had the agreement been in effect during the month of May. There was a larger gain to the consumer in view of the fact that the stabilization of prices is assured. The small consumer now knows on government authority the price paid for coal at the mine.

"This conference can be regarded as the fair measure of the coal industry's cooperation at this time of national need. Another conclusion that can be drawn from the conference is that a real leader has arisen among the coal producers in the person of Francis S. Peabody."

The resolution adopted by the conference with regard to price fixing was as follows:

"*Be it Resolved*, That it is the sense of this meeting that a committee of seven for each coal producing State and an additional committee of seven appointed by the representatives of the anthracite industry be appointed by the representative of each State now attending this convention, to confer with the Secretary of the Interior, the Federal Trade Commission and the Committee on Coal Production of the Council of National Defense, to the end that production be stimulated and plans be perfected to provide adequate means of distribution, and, further, that these committees report forthwith to the Secretary of

the Interior, the Federal Trade Commission and the Committee on Coal Production to fix Council of National Defense costs of and conditions surrounding the production and distribution of coal in each district, and that these committees are authorized, in their discretion, to give assent to such maximum prices for coal f. o. b. cars at mines in the various districts as may be named by the Secretary of the Interior, the Federal Trade Commission and the Committee on Coal Production of the Council of National Defense."

Then later this resolution was adopted:

"This convention by resolution heretofore adopted, having requested the Secretary of the Interior, the Federal Trade Commission and the Committee on Coal Production to fix a fair and reasonable price at which the several operators in the several coal districts of the United States shall sell coal, do hereby further authorize said government representatives, so named in said resolution, to forthwith issue a statement fixing a tentative maximum price which, in their judgment, is fair and reasonable as applied to the several coal districts, at which coal shall be sold from and after the first day of July next and until the accurate costs have been ascertained and a fair and reasonable price based thereon fixed by said government agencies designated under said resolution. To this end, therefore, be it

"*Resolved*, That the several States, here represented, do present to the chairman of this convention a suggestion, for use by said agencies in fixing the price which the several interests here represented feel should be the fair and reasonable price to be so tentatively fixed by the said agencies."

In order to carry out these resolutions, the following price-fixing committees were named:

Alabama—M. W. Bush (chairman), Birmingham, Ala.; H. T. De Bardleben, Birmingham, Ala.; W. C. Adams, Birmingham, Ala.; S. L. Yerkes, Birmingham, Ala.; W. E. Henley, Birmingham, Ala.; Jas. Bonnyman, Birmingham, Ala.; B. F. Roden, Marvel, Ala.

Colorado—D. W. Brown, Denver, Colo.; A. M. Perry, Denver, Colo.; C. L. Baum, Denver, Colo.; S. S. Murphy, Denver, Colo.; G. F. Bartlett, Denver, Colo.; J. Chilberg, Denver, Colo.; H. F. Nash, Denver, Colo.

Illinois—Geo. B. Harrington, Chicago, Ill.; W. J. Spencer, Canton, Ill.; H. C. Adams, Chicago, Ill.; Thos. T. Brewster, St. Louis, Mo.; D. W. Buchanan, Chicago, Ill.; H. H. Taylor, Chicago, Ill.; F. C. Honnold, Chicago, Ill.

Indiana—A. M. Ogle, Terre Haute, Ind.; J. F. Dering, Chicago, Ill.; W. S. Bogle, Chicago, Ill.; W. J. Freeman, Terre Haute, Ind.; M. L. Gould, Indianapolis, Ind.; H. A. Huskey, Chicago, Ill.; P. H. Penna, Terre Haute, Ind.

Kentucky—E. S. Helburn, Middlesboro, Ky.; Jno. J. Coyle, Curlew, Ky.; Eugene McAuliffe, Paducah, Ky.; Alex. Bonnyman,

(Continued on page 253.)

PRODUCTION AND DISTRIBUTION OF COAL UNDER FEDERAL SUPERVISION RECOMMENDED

Federal Trade Commission Suggests Drastic Action in Report Made Congress—
Pooling of Mining and Transportation Interests Held to be Necessary—
Chairman Harris in Dissenting Opinion Declares Plan Impracticable

Chairman Harris Dissents

"I concur as to the findings of fact in the report, and also in the recommendation that the production and distribution of coal and coke be conducted through a pool in the hands of a Government agency.

"I concur with the view that even the above would be ineffective unless Government control extended over all means of transportation of coal and coke; but I can not concur with the view that this should be brought about by pooling all transportation agencies in the United States, both rail and water, on Government account. "the owning corporations being paid a just and fair compensation which would cover normal net profit, upkeep and betterments." The adjustments of claims for "upkeep and betterments," besides compensation for the use of the property during the war, would be so difficult and such a tremendous task that this plan should be adopted only as a last resort; and before it is given a trial I recommend that during the war the President be authorized to order rail and water transportation agencies to give preference to shipment of coal, coke and other commodities in the order of their importance to the public welfare.

Under the Act of Congress approved August 29, 1916;

The President, in time of war, is empowered, through the Secretary of War, to take possession and assume control of any system or systems of transportation, or any part thereof, and to utilize the same, to the exclusion as far as may be necessary of all other traffic thereon, for the transfer or transportation of troops, war material and equipment, or for such other purposes connected with the emergency as may be needful or desirable.

WM. J. HARRIS,
Chairman.

What is regarded as the most drastic step toward governing operation of industries, essential to the conduct of the war is the recent report of the Federal Trade Commission to Congress on the coal situation. The conclusions of the report follow:

The Commission recommends:

First: That the production and distribution of coal and coke be conducted through a pool in the hands of a Government agency; that the producers of various grades of fuel be paid their full cost of production plus a uniform profit per ton (with due allowance for quality of product and efficiency of service); and,

Second: That the transportation agencies of

the United States, both rail and water, be similarly pooled and operated on Government account, under the direction of the President, and that all such means of transportation be operated as a unit, the owning corporations being paid a just and fair compensation which would cover normal net profit, upkeep and betterments.

Faulty rail and water transportation and conditions in the bituminous industry and in the production, control, distribution, and use of coke have been such that much of the gain which should have been secured by the efforts of the Commission, aided by the intelligent and willing cooperation of a great majority of the interests engaged in the production and distribution of anthracite coal, has been lost—this for the reason that though the anthracite market has been filled with a supply which should be adequate for its normal use, the acute shortage of supply in bituminous and in coke, together with faulty distribution and speculation, have driven bituminous and coke prices up to a point which has put anthracite into competition with the other two forms of fuel.

The close supervision of anthracite thus fails of a remedy so long as bituminous runs wild, and the Commission's plan as to anthracite can not be extended over the bituminous industry because of the wide field and the great variation in conditions. The Commission is nevertheless continuing its efforts and will continue them vigorously pending the solution of the whole fuel problem by Congress.

Whatever measure of success has marked the efforts of the Commission with relation to anthracite coal has been largely because the car supply has been adequate by reason of the close corporate relation between rail transportation and anthracite production.

Quite the contrary condition exists with relation to bituminous and rail transportation and with relation to water transportation as to both kinds of coal.

The production of bituminous coal for the first two months of the coal year of 1917 (April and May) has shown a large increase, but not nearly so large as the increase in industrial consumption and not nearly so large as the possible and economical output of mines already opened and in partial operation.

The present production of bituminous coal, the country over, is about 40 per cent short of the possible maximum, and this limitation is solely to be charged, as to primary cause, to faulty rail transportation. The present demand for coal is unprecedented, but the mines now open are capable of filling this demand if adequate car supply is furnished.

It is a fact in the bituminous industry that the capacity of a mine for production and the capacity of labor is limited absolutely by the supply from day to day of coal cars for the moving of the product. Thus we have found that, with the market at unheard of prices, labor is often standing idle at the mines and production is limited as compared with the possible productive capacity.

We find that mine labor is being disorganized by reason of irregular employment and forced idleness, and that in some fields bituminous mines are working only three or four days a week and that willing labor and willing operators are standing idle half the time.

In other fields where there is now a more nearly adequate car supply the irregularity of car supply in months past has so disorganized and discouraged labor that these mines are not now nearly at full capacity of production. The irregularity and uncertainty of employment has caused the miners to be tempted to leave the mines and go into other employment, and, having left, it is difficult to bring them back.

The Commission believes that there are enough coal cars in the country but that there are not enough coal cars delivered to the mines, and that, an inadequate supply having been delivered to the mines and loaded, these cars are not moved to the point of consumption either with the greatest of expedition nor are they promptly discharged upon their arrival at their destination.

The Commission has much testimony of widespread abuse in the use of coal cars by speculators for the storage of coal for speculative purposes, and that the practice of reconsignment is wasteful and a cause of delay and market manipulation.

The Commission finds that coal is not sent to the point of consumption by the most direct route, and that coal cars are being used for transportation of many other sorts of products.

The undue price at which coal can be speculatively sold has resulted in the opening up of temporary and inefficient bituminous mines, called in the industry "snowbirds" or "wagon mines." These temporary and uneconomical mines now secure part of the inadequate number of cars allotted by the railroads to the coal industry. They have none of the usual loading facilities, and the cars are often held at such mines days in the process of loading when a properly equipped mine could load them in a few minutes. The operation of such mines curtails production and is an economic waste at this time.

The Commission believes that the coal industry is paralyzing the industries of the country and that the coal industry itself is paralyzed by the failure of transportation.

The coal problem cannot be worked out so long as the railroads are permitted to divide and allot traffic; to lay embargoes without regard to their immediate effect upon industry or upon the systematic distribution of coal; to give priority to the movement of high-freight rate commodities, and to use the device of "long haul."

During the spring and summer months there should be building up in those parts of the country most remote from the coal-producing States stocks of fuel in the hands of industrial consumers, in the hands of State institutions, of public-service corporations and domestic consumers. This storage is not now taking place, but it must be made during what remains of the summer unless the country is to face, next winter, a most serious and, unless immediately corrected, an irreparable situation.

Whatever remedy may be applied, it should be applied as immediately as possible, for time is passing and no human power can supply the factor of time lost. Time is necessary to build up the stores of fuel in distant points, and that storage should begin without the unnecessary loss of an hour.

On the great lakes it was the custom for ships which carried grain and ore down the lakes to carry cargoes of coal up to the Northwest. During the summer of 1916 many ships which brought down ore and wheat went up the lakes in water ballast, taking no coal. Thus they made three round trips earning high rates on freight one way during the same time that would have been consumed in making two round trips carrying cargoes both ways. This practice was pronounced in the late summer and autumn of 1916, and the result was so serious that when navigation opened this spring the Northwest was facing an actual coal famine. This evil condition has already begun this year, and if persisted in the coal famine which threatened that part of the country in the winter of 1916-1917 will be an actual coal famine in the winter of 1917-1918.

The serious conditions with respect to bituminous coal are unnecessarily curtailed production and a wildly fluctuating market in which speculation feeds upon panic.

The serious aspect as to the country at large is the immediate and intolerable hardship laid upon industry and transferred in large part to the public in increased prices and the future hardship which will fall upon the domestic consumers next winter.

Our predecessors in this world war have had to solve the fuel problem which lies at the base of every military and industrial activity. They have tried various experiments and their failures and successes may well guide us in our search for a solution. In England the government took complete control of the coal mines after less radical methods of regulation failed. The French government has divided France into three coal zones in order to equalize distribution, and the government becomes the sole vender. On May 2, 1917, the Russian provisional government took over all the coal mines of that country with a view to control coal distribution and prices. Soon after the outbreak of the war Germany took measures to still further centralize and control the whole coal industry of the empire under government administration. The Italian government imports all the coal brought into the country and acts as a clearing house for its distribution.

All the nations at war have relieved coal miners from military duty, urging that their greatest service to the State can be performed by remaining at their regular employment. Already, in this country the ranks of the miners are being seriously depleted by enlistment.

If a uniform price were fixed, many mines will be shut down unless the price is high enough to make the highest cost mine profitable. Such a price, in operation, might be found unfair as to the public and especially as to the railroads. No remedy will be effective that does not include constant employment to labor and at fair wages; maximum production of all equipped mines; fair profits to all mine owners; and prompt, equitable, and economical distribution to all consumers, both domestic and industrial.

If inefficient mines are closed, so releasing miners to fill the gaps in the ranks of the fully equipped collieries, this shortage can be repaired. It should not be permitted again to become a serious menace to maximum production.

It would seem that steady employment, fair compensation to labor and capital, equitable distribution and stable prices could be secured by pooling all coal and coke production in the hands of the Government.

If the producer at each mine were paid his full cost of production with allowance for depletion, maintenance, upkeep and all the usual items, and to this were added a fixed and uniform net profit per ton, with due regard to quality, the coal thus produced at widely varying costs, if pooled, could be sold through the Government at an average and uniform price, quality considered, which would be entirely tolerable to the consuming public, and a price much lower than could be fixed if an effort were made to fix a uniform price to the producer.

POOLING OF ANTHRACITE AT TIDEWATER BEING CONSIDERED

With regard to the pooling of anthracite coal Daniel B. Wentz, of the Committee on Coal Production, makes the following statement:

"Four presidents of the anthracite railroads have given some consideration to the pooling of anthracite coal at tidewater and have written reports, which, I understand, have been submitted to the Federal Trade Commission. I saw the report Friday. In substance, they call attention to the fact that anthracite coal is being pooled at tidewater now because of the fact that the railroads own their terminals and most of the coals going over them are mined by the important anthracite companies. The only coal that has not substantially been pooled is the small amount going into New England to tidewater points produced by the individuals, and steps have already been taken to bring about a borrowing and loan account between the individuals. That is being pressed and will be probably consummated at an early date."

THINKS NO INCREASE WILL COME FROM LONGER WORKING HOURS

Anent the suggestion to increase the number of hours from 8 to 9 per day in the anthracite coal mines, the Department of Labor has prepared a table, showing the relative productions in this industry during the calendar years 1915 and 1916. Concerning it the Department issues this statement:

"The agreement to establish an eight-hour day was entered into on May 5, 1916, and the eight-hour work-day went into effect on May 9, following. The eight-hour work-day was therefore in effect for seven months and twenty-three days and the nine hour work-day for four months and eight days during the year 1916. The nine-hour work-day was in effect during all of the year 1915.

"The deficit in total production in 1916 as compared with 1915 was due to the fact that fewer men were engaged in mining operations during 1916 than in 1915.

"It is interesting to note that the production in 1917 is materially in excess of the production for 1916. The production in May of this year was 6,917,525 tons, as against 5,547,899 tons for May last year, and the production in 1917 up to and including May was 30,618,056 tons, as against 27,784,690 tons for the like period last year.

"From these figures it would appear that no gain in production would result from increasing the hours of labor in the anthracite mines at the present time. If greater production is to be obtained, it would seem that some other method must be devised than increasing the number of hours per day."

MANGANESE DEVELOPMENT IN ARKANSAS ATTRACTS NOTICE

Unexpected and important developments of manganese in Independence and Izard counties of Arkansas have given more promising aspect to the domestic manganese situation. The production of this one district in a month is now greater than the production of the whole United States before the war. On the other hand, a number of the manganese bearing districts have failed to respond to prices which are three to four times above normal. The Geological Survey and the Bureau of Mines are sparing no efforts in attempting to encourage a greater local production of this important alloy metal. The need for doing so is clearly pointed out in the War Bulletin of D. F. Hewett, of the Geological Survey, extracts of which were printed in the June issue of the MINING CONGRESS JOURNAL. W. C. Phalen, of the Bureau of Mines, as well as other representatives of that Bureau and the Geological Survey, is in the field gathering information with regard to regions in which manganese occurs and in encouraging miners to undertake operations on this mineral.

GOVERNMENT EXPERTS WELL KNOWN TO MINING MEN



Photo by Harris & Ewing

Prof. G. H. CLEVENGER
Metallurgist

Prof. G. H. Clevenger was born in Pike County, New York. His early education was obtained in Rapid City, S. Dak. Later he attended the State School of Mines in the same city and was graduated in 1901 with degrees of B.S. and E.M. After a year in commercial practice he attended the Columbia School of mines and was graduated in 1903 with a degree of A.M. He then spent two years in the field. In 1905 Mr. Clevenger accepted the position of instructor in metallurgy at Stanford University. In addition he did post-graduate work and took the degree of metallurgical engineer.

During his summer vacations and at other times Mr. Clevenger has engaged in consulting and investigative work. On many occasions this has taken him to Latin America. He is particularly familiar with the Guanajuato, El Oro, Pachuca and the Sonora mining districts of Mexico. He also has worked in San Salvador. In the United States his active consulting work has been confined largely to Colorado and Nevada. He has made several trips to the Cobalt district of Canada. One of Professor Clevenger's inventions is a process of ore treat-

ment in use at the Nipissing mine. For the past three years Professor Clevenger has been on the consulting staff of the Bureau of Mines and is now conducting an important investigation into the cyanide situation. An account of this investigation will be found in another column.

RESERVES OF SULPHUR LARGE BUT EVERY REASON EXISTS FOR DE- VELOPMENT OF PYRITE SUPPLY

Large reserves of practically pure sulphur are on hand at the mines of the Union Sulphur Company, in Louisiana, and on the property of the Freeport Sulphur Company, at Freeport, Tex. This reassuring information has been brought back to Washington by P. S. Smith, the administrative geologist of the United States Geological Survey. Reports have been in circulation for some time that the sulphur of the United States had been depleted greatly and that a serious situation threatened, due to the reduction of imports of Spanish pyrite.

While Mr. Smith finds that there is no reason to think that the production of sulphur will not continue at practically the same rate as in the past several years, he points out that this fact should not be taken as a reason to relinquish the exertion of every effort to continue to develop domestic supplies of pyrites. To use the practically pure product, when sulphur obtained from its combination with iron and other minerals will serve many purposes equally well, would be very poor policy, Mr. Smith believes. He advises that every means be taken to encourage the use of the less valuable material rather than taking the pure product for the making of sulphuric acids and other processes which do not require it. Mr. Smith also calls attention to the fact that two-thirds of the country's production of pure sulphur is used by the paper mills. Since the European practice has shown very clearly that sulphur from pyrite is highly satisfactory for this use, he believes that this means should be taken of conserving the purer supplies which are now more greatly needed by the nation than ever before.

That many gold and silver mines, many of them long since abandoned, should be the source of enormous quantities of sulphur is another conclusion which has been reached by Mr. Smith after a detailed investigation of the subject. In many mines the pyrite content of the veins is very high. That this can be saved with profit to those conducting the mining and at the same time be of great service to the country, is the view expressed by Mr. Smith.

Given Spelter Rate

Zinc and spelter dross from western ports to Gulf ports have been given the advantage of the same rates as are contemporaneously in effect on spelter without observing the long and short haul provision of the Fourth Section of the act to regulate commerce.

LAKE CARGO COAL RATE REPORT BRINGS OUT PROTESTS

Some of the points made in the brief of the Pittsburgh Coal Operators' Association in opposition to the Interstate Commerce Commission's preliminary opinion on lake cargo coal rates are as follows:

"We suggest that the shippers of lake cargo coal are entitled to some participation in the results of the greatly improved conditions of operation on the Norfolk and Western, because those shippers have helped in every way to make those results possible. Instead, it is proposed that those shippers should pay relatively 6 cents per ton more.

"We submit that the Commission should reopen the lake cargo proceedings and require the production of the witnesses for whom we asked, or exclude from all consideration in the case the exhibits involved.

"The bearing of the conclusion as to Ohio River bridges is excepted to in that the effect of the finding is to increase the West Virginia differential as against the Pittsburgh district as well as against the Ohio district."

The Central West Virginia Coal Operators' Association filed the following exceptions:

"The tentative report accepts as convincing tests made by the carriers based upon a limited number of destination points but assigns as one of the reasons for disregarding tests made by the operators, the fact that they are based on a limited number of shipping points.

"The report should have found that the shipment of high volatile coals from southern West Virginia east to tidewater is negligible

"The tentative report assumes that from 3,500,000 to 5,500,000 tons of bituminous coal used in Chicago annually come from the Kentucky and West Virginia (exclusive of New River and Pocahontas), whereas the evidence shows in exact figures that this tonnage is considerably less than the figures thus assumed."

The proposed advances in bituminous coal rates to Central Freight Association territory, brings forth the following from the operators in the Pocahontas, Tug River and Thacker districts:

"Admitting for the sake of argument that the carriers may lawfully make a joint showing, we desire to call the attention of the Commission to the seriousness of breaking up and destroying a rate relationship of fourteen years' standing under which great business enterprises have been built up and under which great tonnages move and of establishing a new differential upon the evidence of one man. The gravity of the situation is enhanced when, as is true in this case, the evidence of that witness is not confined to facts within his own knowledge."

Receive \$34,000 Worth of Radium

During May radium valued at \$34,000 was delivered the Bureau of Mines by the National Radium Institute.

MOSCOW STATION MADE POSSIBLE BY GENEROSITY OF OPERATORS

Generous contributions by the operators of mines in Idaho have made possible a Bureau of Mines station at Moscow. A number of months ago the Bureau of Mines entered into a cooperative agreement with the University of Idaho to establish a Federal station at Moscow for the purpose of investigating all mining problems of that region. Action on the part of Gov. Moses Alexander in vetoing the appropriation for the university's portion of the expense of the maintenance of the station apparently put an end to the project. The need for such a station, however, is so apparent that the operators, by voluntary contributions, have raised the University's portion of the expense and the work of the station already has been begun.

Van H. Manning, Director of the United States Bureau of Mines, has assigned C. A. Wright, a geologist in the Bureau's service now stationed at the Salt Lake City station, to take charge of the supervision of the work at Moscow. The work done by Mr. Wright on Joplin and Wisconsin zinc ores has attributed largely to his well-established reputation.

One of the principal activities of the Moscow station will be a study of the subject of ore dressing. In order that this work may be handled by an expert in this particular branch of the industry, T. Varley has been given general supervision of that work. Mr. Varley has been in charge of all non-ferrous ore dressing work for the Bureau. Before joining the Bureau of Mines he was in charge of the ore dressing problems for the Federal Mining Company.

SUNDRY CIVIL BILL BECOMES LAW AFTER UNUSUAL DELAY

After long delay in conference, the sundry civil bill, which contains the appropriations for the Geological Survey and Bureau of Mines, has become a law. This bill carries \$1,550,520 for the Geological Survey and \$1,167,070 for the Bureau of Mines.

The bill provides money for the establishment of three large mining experiment stations and for the construction of three additional mine rescue cars. Investigations are now in progress looking to the selection of the location of the three experiment stations. It probably will be several weeks before the locations are announced. It is understood, however, that one station will be devoted to the iron industry, one to the oil industry and one to the ceramic industries.

The bill makes possible a change for which the Bureau of Mines has been striving for some time. It empowers the Public Health Service to assign members of its staff to work requiring a knowledge of physiology and medicine. In the past it often has been necessary for a mining engineer to pass upon purely physiological problems. It is to obviate this and to increase efficiency that the Bureau insisted upon this legislation.

MOST POWERFUL LOCOMOTIVE HAULING ANTHRACITE CARS

Tests of a new type of giant engine recently received by the Philadelphia and Reading Railway Company for use on the mountain haul from St. Clair to Frackville are said, by the Pottsville Journal, to have been most successful. On its initial trip one of these monster locomotives pulled up this heavy grade twice as heavy a train load as was formerly hauled by the "bull moose" type of engine which it is replacing and which until now was the most powerful machine of its kind in the anthracite region.

The size of this new type of locomotive astonishes all who view it. It has a total weight of 282½ tons and the driving wheels are 52 inches in diameter. The high pressure cylinders measure 36 inches, and the low pressure ones are 40 inches. Automatic stokers provide a constant food to the fire box, the fuel being conveyed through a worm screw attachment operated by a wheel from the rear of the fire box.

Evidence of the great pulling power of these engines was shown in the trip of the first to be tested. On that occasion a train load of 3,500,000 pounds was hauled up the heavy grade, and at the satisfactory speed of about half as fast as the time schedule for passenger trains. Because of the immense size of the engines, the company is placing 130 pound rail on the grade, and an additional clearance of 30 inches has to be provided along a part of the right of way.

WEST VIRGINIA OPERATORS WANT NATIONAL PROHIBITION

At a general meeting of the Central West Virginia Coal Operators' Association, held in Fairmont, W. Va., recently, the following resolution was adopted unanimously:

"Resolved, That this Association, representing a membership of coal operators producing annually more than 15,000,000 tons of coal in the counties of Monongalia, Marion, Harrison and Taylor, in the State of West Virginia, do request our Members of Congress and United States Senators to use all their influence and every effort to further the cause of National Prohibition, in order to conserve the supply of grain and also to promote greater industrial efficiency."

WILL TRY TO SAVE TIN FROM CANS THAT HAVE BEEN USED

As a part of its work in the prevention of mineral waste, the Bureau of Mines has taken up, at the Seattle Station, an investigation of the amount of tin, zinc and iron that may be recovered from scrap tin plate, used tin cans and galvanized iron. This investigation will take into consideration the commercial feasibility of the attempt to conserve the above metals which are now wasting.

RESUSCITATING DEVICES SUBJECT OF REPORT

In view of the increasing uncertainty with regard to the use of mechanical devices for resuscitation, the following report on these devices by the Public Health Service will be of interest:

"From time to time, at the request of the General Superintendent of the Life-Saving Service (now consolidated with the Revenue-Cutter Service into the United States Coast Guard), investigations have been made by this service of certain mechanical devices recommended for the resuscitation of apparently drowned persons. A request from the same official was received in January, 1915, that tests be conducted of an apparatus called 'lung motor' to determine its merits for use in resuscitating the apparently drowned.

"The investigations of the apparatus were conducted at the Hygienic Laboratory by Surg. J. W. Schereschewsky and Technical Assistant G. B. Roth from May to July, 1915, when a report was rendered. It was in substance the opinion of the investigators that, while manual methods of resuscitation should be primarily relied on and cannot be dispensed with by any mechanical device thus far known, mechanical means for producing artificial respiration should be available in places where accidents may occur from drowning or exposure to poisonous gases. Mechanical methods of respiration are especially indicated in cases of great relaxation, collapse of the lungs, and gas poisoning, and also when signs of reanimation fail to appear shortly after the application of manual methods.

"While, in so far as actual ventilation of the lungs is concerned, mechanical methods are superior to manual, it was the opinion of the investigators that the delay incident to the application of mechanical methods at a time when every second is of value constituted a serious argument in favor of manual methods. They therefore recommended that in all cases of submersion or exposure to poisonous gases manual methods should be applied without delay and let the use of mechanical respiration be decided by the condition of the subject.

"As a device for mechanical respiration in appropriate cases, the investigators concluded that the lung motor is a satisfactory device provided the suction stroke is not used. They were in accord with the committee on resuscitation from mine gases, who, in their report to the United States Bureau of Mines, condemned expiration produced by repeated suction of air from the lungs. It was recognized that the lung motor may be used as a device for producing inspiration only, the suction stroke being dispensed with. In this case the apparatus should be provided with a release valve, which will allow air to escape

outside whenever inspiratory pressure reaches a maximum of, say, 20 millimeters of mercury. Used in this manner and by persons having the requisite skill and experience the investigators were of the opinion that an apparatus similar to the lung motor would be free from danger and in suitable cases have a field of usefulness."

Booklet Tells of Motor Truck's Trip

Motor truck men and motorists of every station were vitally interested last summer and fall in the double transcontinental journey made by a 1½-ton GMC truck, which first successfully negotiated the national highway from Seattle to New York and then returned to the Pacific port by way of the middle west and southwest.

As the most remarkable long distance trip ever completed by a motor truck and as a demonstration of the practicability of overland trucking, the journey of the GMC stands out prominently in the history of the motor truck industry. It was a superhuman labor for William Warwick, the man who drove it the entire journey alone, and a supermechanical work for the truck.

Warwick's experiences in the mud of every State, over mountains and through canons make a tale as romantic as any fiction and as full of interest as the memories of Bayard Taylor or any other travelers of note. In addition, Warwick had the advantage of photography and his story of the trip has ample illustration in the snapshots which he took at every stage of the way.

So great has been the demand for the details of the trip, as viewed in the perspective of the completed journey that the General Motors Truck Company has compiled Warwick's story and his pictures into an attractive booklet for the benefit of any one who would like to read the story of the truck's long voyage.

These booklets are just recently off the press, and the General Motors Truck Company will gladly send copies to any who asks for them.

An Interesting Publication

In its recent issue, the *Employees' Magazine*, published by the Lehigh Valley Coal Company, tells of plans for a library and reading room for the free use of employees and which is to be located in the main office building, at Wilkes-Barre. This issue contains an interesting article by Superintendent Thomas Thomas, directing assistant foremen to remain in places with bad roof until they are made safe. There is an account of the Primrose mine fire, where helmet men were overcome while aiding in rescue work. A number of articles deal with technical subjects, and there are biographical sketches, prize contest problems, and much valuable information in the interest of efficiency, and accident prevention.

OIL DEPOSITS MAY EXIST

IN EASTERN COLORADO

The United States Geological Survey has not investigated the geology of eastern Colorado, western Kansas and western Nebraska with the detail that is necessary for the determination of local structures which are favorable to the occurrence of oil and gas. The general geology of this area has been described and mapped in Professional Paper 32, "Preliminary report on the geology and underground water resources of the central Great Plains," which shows broad major structure and contains records of numerous wells that have been drilled in the region.

As far as the Survey is informed, no authentic indications of oil or gas in eastern Colorado have been reported, but it is not impossible, this being a region of sedimentary rocks belonging to the formations that carry oil and gas in other areas that these deposits may be found. Professional Paper 32 includes mention of a boring at Cheyenne Wells, in Cheyenne County, in the lower portion of which considerable gas was encountered, as a consequence of which a local company was organized to develop a gas supply by a second boring. The latter reached a depth of 1,700 feet, but was then abandoned, as the gas was found to be of insufficient quantity.

Apparently, no oil and gas accumulations of economic importance have ever been discovered in Nebraska, although some of the western counties, notably Frontier and McPherson, are being tested. The following statement appears in Professional Paper 32 in connection with the description of an anticlinal axis which extends across western and central Nebraska and is clearly defined in the vicinity of Stockville and near Chadron:

"If there is oil in western Nebraska, the best prospects for obtaining it would be along this uplift, for in many regions the oil occurs in largest amounts along anticlinal axes. In the region north of Chadron and along Republican Valley near Indianola borings 3,000 feet deep would probably test the strata satisfactorily. It is believed, however, from the character of the rocks, where they are uplifted to the north and the west, that the prospects for oil in western Nebraska are not encouraging."

Facts as to Chromic Iron Ore

Chromic iron ore occurs in scattered grains throughout many bodies of serpentine, and locally it forms nodules or lenticular masses large enough to be of commercial importance. Chromite is generally not magnetic, and can thus be distinguished from magnetite, but to render its identification sure certain chemical tests must be made to prove the presence of chromium. The simplest is to test it before a blowpipe in a bead of borax or salt of phosphorus, which, on cooling, becomes green.

GOVERNMENT EXPERTS WELL KNOWN TO MINING MEN

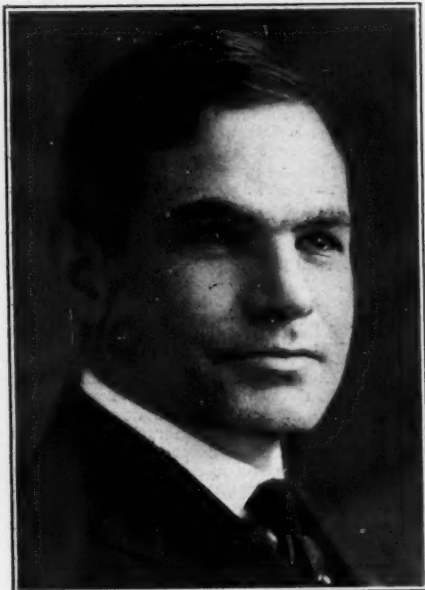


Photo by Harris & Ewing

JAMES MADISON HILL
Geologist

James Madison Hill was born in Chicago, February 14, 1884. His early education was obtained in the public schools of Chicago. His preparatory work was done at the University School of Cleveland and at the Chicago Manual Training School. He then entered the University of Chicago and was graduated in 1906 with degree of B.S. He attained a senior scholarship in geology. In addition to post-graduate work in the University of Chicago, Mr. Hill did work at the Armour Institute and the Michigan School of Mines.

In 1907, Mr. Hill undertook some important geological work north of the Cobalt region of Canada. This district is now known as the Elk Lake region. Late in the same year he joined the Geological Survey. From that date until 1912 he was engaged principally in geological reconnaissance work in the western States, particularly in Nevada, Arizona, New Mexico, and Colorado. During this period, however, he did some work in practically all of the western States. Mr. Hill was engaged in 1912 and 1913 in making a detailed geological study of the Gilpin County district of Colorado. In 1912

he was assigned to the mineral resources division of the Survey.

Mr. Hill is now specializing in platinum, paint materials, barite, strontium and in gold, silver, copper and zinc, in the eastern States. He also is in charge of the bauxite and aluminum work being conducted by the Survey.

RAILROADS POINT TO WAGE INCREASE AS REASON FOR BIG FREIGHT RATE INCREASE

Further increases in the wages of railroad employes were disclosed in the shippers' cross-examination of railroad executives before the Interstate Commerce Commission in the 15 per cent rate case. Judge Dickinson, receiver of the Rock Island, stated that wage advances his company would be compelled to make to various classes of employes would add several million dollars to his previous estimate of increased operating costs. It was stated for the Burlington that there had been increases in wages since the petition for advanced rates was made of over \$3,000,000 a year. The Missouri Pacific presented figures showing an increase of \$1,278,000 in the company's pay roll in addition to the increased wages to trainmen, and it was stated that the shop men were asking for an increase of nearly \$2,000,000 in their wages on the Missouri Pacific.

The railroads had previously estimated that the Adamson law and other wage increases would add \$116,000,000 to the pay roll, but today it was stated that recent adjustments of pay and the demands of shopmen and other employes would greatly increase this amount.

Judge Dickinson was followed by R. H. Ashton, President of the Chicago & Northwestern, W. B. Biddle, President of the St. Louis-San Francisco; B. L. Winchell, traffic director of the Union Pacific, and A. L. Conrad, Assistant General Auditor of the Santa Fe. Mr. Winchell was asked by one of the shippers' representatives whether he knew of any way whereby rate relief could be given to the less prosperous roads without unduly adding to the profits of the few prosperous companies. Mr. Winchell said that he knew of no way that this could be done.

Mr. Biddle was questioned regarding the Frisco reorganization expenses and the increased capital of the company under the reorganization plan. Mr. Biddle said that while the securities had been increased in amount, stock had been substituted for bonds so that the fixed charges were now smaller than before the receivership.

The new Union Pacific ticket office in New York was the target of criticism from one of the shippers' representatives. He said he had not seen the new office, but he had read that it was as palatial as a Fifth Avenue drawing room. He asked Mr. Winchell if this were not an extravagance in times like these. The Union Pacific traffic director said that only \$6,000 had been expended in fitting out

the office and he did not think that this was an extravagant amount to spend on a ticket office in the greatest city in the country. When asked whether the railroads could not save a great deal of money by abolishing competitive ticket offices in the large cities, Mr. Winchell said this was entirely possible if somebody would first abolish competition between the railroads.

CARL SCHOLZ TO DIRECT BIG COAL OPERATION FOR THE C., B. & Q.

Formal announcement was made recently that Carl Scholz has accepted the position as consulting mining engineer of the Chicago, Burlington & Quincy. To do so, he resigns the position as manager of the mining and fuel department of the Chicago, Rock Island & Pacific Railway.

Mr. Scholz began his new work with the Burlington on June 1. That railroad has about 15,000 acres of coal land in Franklin County, Illinois. It desires to develop at once, a large mine for the production of the fuel to be used by that railway. It selected Mr. Scholz for that particular work and he is starting in with the intention of developing what he believes will be the model mine of the world—at least that is his present ambition.

It is interesting in this connection to know that this is the fourth position that Mr. Scholz has held in his lifetime. He came to America from Germany about twenty-five years ago. After temporary work in West Virginia, he joined the force of the Mount Carbon Coal Company. This position he retained until he went into business for himself, having as a partner, James Thomas, of Charleston, W. Va. They developed a couple of mines and ultimately sold them to the Sunday Creek Company, of Columbus, Ohio.

He was a consulting engineer in St. Louis for a short time when he accepted a position as manager of some mines for the Rock Island Railroad in Oklahoma and afterwards took over the management of other mining properties in which the Rock Island-Frisco combination became interested. It was in this way that he became first the director and then the head of the Consolidated Indiana Coal Company and the Coal Valley Mining Company with headquarters in Chicago and mines in northern Illinois.

Lately Mr. Scholz has been manager of the mining and fuel department of the Rock Island which he organized. He not only had charge of the mines operated by that company for the production of its own coal but he supervised the purchase of other coal and also the distribution and burning of it. He made a record in the latter respect which is truly astounding and it may be said without going into details, that he is the first man in America to put the fuel department of a railroad upon a scientific basis.

The results already obtained are big enough to make a record for almost any man, but a



CARL SCHOLZ

routine was started which will save the Rock Island increasing amounts of money as the years go on.

Not only that, but this year he devised and put into effect a series of contracts for coal which will give, it is believed, the Rock Island the best fuel record in America.

These things would seem to indicate that Mr. Scholz has lived a busy life, however, they only begin to tell of some of his achievements. For one thing, as a consulting engineer and geologist, he discovered, proved and opened a coal field in Alabama where no one believed any coal existed. He has always been interested in coal combustion, has worked patiently at it for a number of years, finally developed and put on the market one of the best grates for hand-firing furnaces that has ever been designed. He has a growing company that is devoting itself to that now.

In a public-spirited way, he has acted as consulting engineer and geologist, working with the Bureau of Mines and the United States Geological Survey. He has been a member of and participated in the activities of many scientific societies and for a number of years has been director of the American Mining Congress and for three years was its president. It is not going too far to say that under his administration, the Mining Congress was for the first time put upon a sound financial basis due entirely to his activities.

Mr. Scholz is 45 years of age.

DURATION OF IRON ORE RESERVES A MATTER OF NATIONAL CONCERN

Director Smith of the U. S. Geological Survey in Address before Editors' Conference Tells of Anxiety Caused by Tremendous Run on Iron Deposits—
Metal Content Decreases as Demand Becomes Greater

Efforts that are being made by the Geological Survey to seek out the minerals of which there is a deficiency of supply were discussed by Dr. Geo. Otis Smith in an address before the conference of editors of business papers, held in Washington recently. Dr. Smith's address is as follows:

The United States Geological Survey is largely a service of exploration, so that it may be appropriate for me to map out in a reconnaissance way some of the territory now occupied by both Government and industry. In one sense, pretty much all has become twilight zone now, because Business and Government must have joint possession in order to secure best results.

I need not trace for you the progress of this idea of relationship between Government and business, nor point out the changes in attitude, or in policy, my purpose is only to emphasize the fact that never before has the connection been closer nor the conviction stronger that these two co-tenants are, and of right should be cooperative rather than antagonistic.

America's largest war-profits will come in the growth of ideas and ideals, and I venture to suggest to you gentlemen representing the business press of the country that foremost among these larger ideas will be our greater realization of the interdependence of Government and industry. Our nation in its time of stress is gaging its sources of strength and the Federal Government is leaning heavily upon every productive industry. But on the other side, I believe the patriotic leaders of industry who are backing up our President are coming to appreciate better the contributions that can be made to their business through Governmental agencies.

The United States Geological Survey tries to promote American industrial development through investigations of natural resources—the nation's wealth in land, in water, and in minerals. For nearly 40 years this scientific bureau has expended the people's money in exploration and research, and one part of this work has been the making of an annual inventory of mineral resources, not merely a statistical statement of production and consumption, but with that a study of the sources of this mineral wealth and an estimate of the reserves to be drawn upon for future use.

At the very outbreak of the European War, Secretary Lane called public attention to the industrial readjustment that must result and a few weeks later the Geological Survey de-

veloped this idea further by publishing a bulletin entitled "Our Mineral Reserves," in which the opportunities for expansion in the mineral industry were discussed. The subtitle of that little volume "How to make America Industrially Independent," had then more of a "scare-head" look, but in less than three years many of the possibilities therein set forth have become actualities and our mines are supplying much that was then imported, while in the four most important metals, iron, copper, zinc, and lead, the nation's resources of ore have been found sufficient to meet the rapidly increasing demands of our allies, although for the present year this will mean increases of from 50 to 90 per cent above the average output for the years just preceding the war.

Any inventory of America's mineral wealth cannot fail to reveal—large reserves of most of the essential minerals, large productive capacity of mine and smelter, and large consumption of these raw materials in the varied industries which you editors represent. Such facts spell out industrial independence in a degree not approached by any other nation. Yet with this rapidly expanding business of the nation, some deficiencies of supply stand out and therein comes the opportunity of the Federal bureau to serve private industry. Not only does the United States Geological Survey in thousands of cases act as the agent in bringing consumer and producer together, but its field geologists are today in the West and South seeking to add to the known supply of such varied minerals and ores as pyrite, platinum, graphite, manganese, potash, tungsten, glass-sand, tin, molybdenite, and nickel. To stimulate production and facilitate distribution is our aim and we can do this only through serving directly the various industries concerned.

The geologic work of adding to our supplies of the mineral fuels is properly a function of the Government—it is the collection of facts, which like long-lived seeds will come to ultimate fruition. Too much value can hardly be placed upon investigations which add to the known resources of such essential raw materials as coal and iron, for example. We appreciate coal most when the supply runs short. In writing an editor of a coal paper only this morning, regarding the priorities of coal-users, I stated the case of the railroads somewhat in this way—if railroads are sometimes termed the arteries of an industrial nation, coal comes nearest being the vital

spark that keeps the heart pumping the currents of commerce along these many lines, that together constitutes a circulatory system hardly less complex than that in the human body. Without a sufficient and adequately distributed supply of this fuel which furnishes our power, the whole mechanism of our industrial life will slow down and stop.

No less truly is iron at the basis of America's industrial development. The present output of iron is so large that it can hardly be plotted on the same scale with the other metals. This tremendous run upon Mother Earth's treasure vaults makes the duration of our iron-ore reserves one of national concern. Just yesterday in reading the manuscript of a Survey report on the iron-ore supply, I was struck with the complexity of the subject. The annual census of ore mined shows an already large tonnage rapidly increasing each year, and the average metal content slowly decreasing each year, so that together these two factors make any estimate of reserves difficult, and this difficulty is added to by the gratifying fact that at present new discoveries of ore are practically keeping pace with the heavy production. In a word, the geologist and engineer have not yet discovered all the iron ore in the country, nor has the metallurgist reached his limit in utilizing the lower grades of ore. On the subject of coal and iron we Americans can be optimistic.

But I am mentioning only one class of problems with which the Geological Survey is dealing at this time. Our hydraulic engineers are equally active in putting at the service of the industrial engineers all the steam-flow data necessary to the best use of the rivers of the United States, whether for power or irrigation, and the corps of topographers, specially trained men who usually are engaged in making the maps that are found useful in so many of the arts of peace—this corps is now acting under orders of the War Department and thus doing its "bit in national defense."

About a year ago, before an audience of scientists, I expressed my belief that in certain respects a scientific bureau needs to be as practical as any industrial plant, that big business and pure science alike must be productive without undue waste or high cost. To you editors in this conference, I wish to add, that I pledge the best efforts of nearly nine hundred associates in the United States Geological Survey to cooperate with you in making more effective use of the varied energies of our nation. A federal bureau exists only to serve.

Increased Rates Suspended

Proposed increases in the rates for the shipment of coal and coke from Arkansas and Oklahoma points have been ordered suspended by the Interstate Commerce Commission, until July 26.

ELECTRICITY NO BAR TO COAL DEVELOPMENT IN THE WEST

Any increase in the production of coal which may be obtained on the Pacific coast will be readily absorbed locally in the opinion of Alfred G. White, economist of the Bureau of Mines, who has looked into this matter recently. Fear has been expressed in some quarters that the success of railroad electrification in the West would have a retarding influence upon the development of coal properties. A study of the relative use of coal, fuel oil and water power convinces Mr. White that the latter two sources of power will not affect the development of the coal industry.

In fact it is more probable that the development of the coal industry of the West will have a tendency to retard electrification. The coal mines in most cases are owned by the railroads. Since the railroads are the principal users of fuel, it is natural to suppose that they will develop these properties rather than attempt to use electricity, excepting on such portions of their lines where all conditions particularly favor it. With the increasing population of the West, there is a constantly enlarging demand for coal as a domestic fuel. Since the use of coal is increasing very much more rapidly than is the population a clear indication is furnished that the industries are increasing and that practically all of them are using coal as the source of their power.

To use electrical power advantageously requires such advantages of location that it is believed that the average industrial plant in California must rely more and more upon coal as the supply of fuel oil decreases. Even if the supply of oil should continue constant or should increase, the price outlook is such as to favor increased use of coal.

Bureau of Mines Publications

The Bureau of Mines has issued the following publications:

Coal-mine fatalities in the United States, 1916, compiled by A. H. Fay. 1917. 42 pp.

Bulletin 119. Analyses of coals purchased by the Government during the fiscal years 1908-1915, by G. S. Pope. 1916. 118 pp.

Bulletin 143. Abstracts of current decisions on mines and mining, reported from May to August, 1916, by J. W. Thompson. 1917. 72 pp.

Technical Paper 87. Methods of testing natural gas for gasoline content, by G. A. Burrell and G. W. Jones. 1916. 26 pp., 7 figs.

Technical Paper 106. Asphyxiation from blast-furnace gas, by F. H. Willcox. 1916. 69 pp., 8 pls., 11 figs.

Technical Paper 165. Quarry accidents in the United States during the calendar year 1915, compiled by A. H. Fay. 1917. 77 pp., 1 pl.

Technical Paper 168. Metal-mine accidents in the United States during the calendar year 1915, compiled by A. H. Fay. 1917. 114 pp., 2 figs.

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MUCH OF WASTE IN COAL MINING NOT WILFUL, DIRECTOR MANNING POINTS OUT CLEARLY

Statements in the newspapers relative to the annual loss of 250,000,000 tons of coal is undoubtedly quoted from a publication issued in 1912 entitled "Notes on Mineral Waste." The statement was made by the late Director of the Bureau, Dr. Joseph A. Holmes. Information received by Van H. Manning, Director of the Bureau of Mines, from the coal mining engineers of the Bureau, from their investigations in various fields, fully substantiates Dr. Holmes' statement that one-third of the coal originally in the ground is at the present time lost.

It is, of course, true that in certain areas and with certain managements the recovery will be very much higher, particularly in long-wall mining where nearly all the coal is recovered; but on the other hand there are various fields where fully one-half the coal is left in the mines, Mr. Manning points out.

The losses come about in the following ways:

1. In the nonrecovery of pillars.
2. By careless mining.
3. In the loss of roof coal and small beds immediately above the coal bed being mined through being broken by such mining.
4. The loss of fine coal, such as produced by machine mining and by excessive blasting being thrown into the gob.
5. Coal of a dirty, or bony character which is left in the mine.

It must not be understood, Mr. Manning says, that the Bureau regards the loss of such coal as being in any sense wilful waste. In the past one of the principal causes has been extreme competition, which has made the margin of profit so low that only the most cheaply mined coal could be worked. It has been noted by

Geo. S. Rice, chief mining engineer, that in one mine where the prevailing thickness of coal worked was 10 to 12 feet, it was impossible to get the miners to work 5-foot coal at a price which would allow it to be sold in competition with the thicker coal.

"Large losses of coal occur in Central Illinois and Indiana," says Mr. Manning, "because the bottom is comparatively soft and it is necessary to leave very large room pillars to prevent squeezes, and these room pillars are never recovered. The only alternative under the mining conditions is to drive the entries to the boundary of a given property and work back, taking out the coal completely. This defers returns to the mine operator, and needs large capital. With the small margin of profit there has been in the past this is difficult to meet.

"Moreover, as much of the surface is splendid farming land, it is more valuable per acre than the coal in place, and as the surface is comparatively flat and usually requires extensive tiling the farm owners would rather have some of the coal sacrificed than to damage the tiling and surface through extensive subsidence. Nevertheless, the Bureau is hopeful that improved methods will be adopted, such as long-wall and the filling of the excavations with sand, shale, and cinders, thus obtaining practically all the coal; but it must be expected that this will mean an increased cost in producing the coal, which is one reason why in European coal mines the coal costs more to produce, since there such improved methods are generally required by the land owners or by the government authorities."

MAP AND NAMES MEET APPROVAL OF GEOGRAPHERS

A map and classified list of names of the physiographic divisions of the United States have been prepared by a committee of the Association of American Geographers. This committee includes two members of the Geological Survey's committee on physiography and has worked in close collaboration with the Survey's committee. The map and list have met the general approval not only of the members of the Association but of other physiographers and geologists, both here and abroad, and will doubtless for many years be regarded as a standard. The committee on physiography unanimously recommends that the Geological Survey adopt the classification. Instructions have been issued by the Survey that these names and boundaries should be used by every Survey author in any manuscript prepared for publication unless he can show that some other classification is better adapted to the area he describes or better expresses the facts known to him. Any Survey geologist who is not satisfied with the classification or the names will state his objections and the grounds for them to the committee on physiography, which will consider the objections and submit recommendations to the Chief Geologist.

GOVERNMENT EXPERTS WELL KNOWN TO MINING MEN

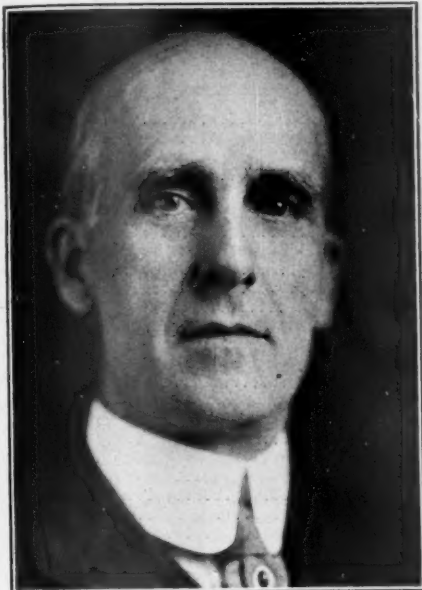


Photo by Harris & Ewing

Dr. RICHARD B. MOORE
Metallurgist

Dr. Richard B. Moore was born in Cincinnati. His early education was obtained in London and Paris. Afterwards he attended the University College of London and later went through Chicago University from which institution he was graduated in 1896. He then took a post-graduate course in chemistry at the University of Chicago.

Following his post-graduate course, Dr. Moore spent eight years in the University of Missouri as a member of its faculty. He then was called to the Chair of Chemistry in Butler College in Indianapolis where he served for six years.

Dr. Moore was associated for a time with Sir William Ramsay, the noted English chemist, with whom he conducted special research work.

On his return to the United States, Dr. Moore was called to the Department of Agriculture where he was made assistant to the chief of the United States Bureau of soils. For the past five years, Dr. Moore has been in charge of the Colorado station of the United States Bureau of mines which is devoted chiefly to rare metal work.

LABOR REPRESENTATIVES ADDED TO PEABODY'S COAL COMMITTEE

One billion tons of coal is the promised production for the nation next year under an agreement reached between officials of the United Mine Workers of America who met the coal committee of the Council of National Defense here by special invitation.

W. S. Gifford, director of the Council of National Defense made the following statement:

"Far-reaching results are expected from the meeting held in the office of the Secretary of Labor with representatives of the United Mine Workers of America, the American Federation of Labor, the Council of National Defense, and the Committee on Coal Production of the Council. As a result of this conference the following representatives of labor will become members of the Committee on Coal Production.

"John P. White, president; Frank Hays, vice-president; Wm. Green, secretary, and John L. Lewis, statistician, of the United Mine Workers of America, James Lord, president of the Mining Department of the American Federation of Labor; John Mitchell, chairman of the Industrial Commission of the State of New York, and H. L. Kerwin, secretary to the Secretary of Labor."

In addition to Secretary of Labor Wilson and the representatives of the United Mine Workers of America, there were present at the meeting Samuel Gompers, president of the American Federation of Labor and member of the Advisory Commission; F. S. Peabody, chairman of the Committee on Coal Production; and W. S. Gifford, director of the Council and of the Advisory Commission.

GEOLOGISTS PLAY IMPORTANT PART IN WAR PREPARATIONS

The War Department is establishing army camps at numerous points for training and quartering its forces. The geological situation involved in the site is an important matter. A competent geologist points out features in possible sites which might be determinative as between conflicting claims of different localities. Such matters as water supply, drainage, local climate and adaptability to troop movements which are distinctly dependent upon the geology and topography of any district, are also of fundamental importance in selecting camp sites.

Another subject on which geology bears strongly is the location of earthworks and lines of defense. Certain formations make ground finely adapted to defensive fortifications like Round Top at Gettysburg while others, like glacial eskers around Boston, have little or no value. Some permit rapid excavation for trenches, etc., while others forbid it. Many formations differ little in outward appearance except to a trained geologist and have a similar appearance on maps, yet for military purposes they are as different as black and white. Some formations always make bad territory for troop movements, others are good in dry weather but hopeless in wet weather, while still others can always be traveled over with ease.

MINERS' CONSUMPTION SUBJECT OF PUBLIC HEALTH SERVICE REPORT

Miners' consumption consists essentially of a mechanical injury to the lungs due to the prolonged inhalation of hard-rock dust, says a recent statement from the Public Health Service. It has been recognized as being prevalent in some American mining districts, particularly in the Joplin zinc and lead districts. It was to determine its actual prevalence, and its relationship to pulmonary tuberculosis that the investigation was undertaken.

In the Joplin district certain mines are known as "sheet-ground" mines, in which the ore is found imbedded in an exceedingly hard flint. In drilling and other mining operations this flint rock is finely pulverized. The minute rock-dust particles enter the lungs, in the process of natural breathing, and by their irritating action cause the formation of fibrous, or scar-like tissue. The effect of this is to lessen the lung's ability to expand and contract, with the result that the victim first notices that he is becoming short winded. With continued exposure to this silica containing dust, the difficult of breathing increases, until the miner is no longer able to perform active physical labor. It was found also that men with dust-injured lungs were especially liable to develop tuberculosis, the dust irritation lessening the ordinary resisting powers of the lungs. While miners' consumption is not in itself infectious or contagious, it predisposes to tuberculosis. The greater the amount of rock-dust injury the greater the liability to tuberculosis; the far advanced cases of miners' consumption practically all become tuberculous before their death.

Under an entirely voluntary system 720 miners presented themselves for physical examination, of whom 433 were found to have had their lungs injured by the inhalation of rock dust; of these 103 were also tuberculous, the amount of tuberculosis infection being greatest among the advanced cases of the rock dust disease.

Five years steady work with exposure to flint dust is fairly certain to find the miner in at least the first stages of miners' consumption. If the miner continues his work after being affected, death usually results within ten years from the time that exposure to flint dust commenced. Poor housing conditions were found to be prevalent and to add to the liability of tuberculosis infection. Apparently tuberculosis is now occurring at an earlier stage of miners' consumption than was formerly the case. The report lays emphasis on the necessity of preventing the spread of tuberculosis through these cases, especially among miners' children. The fact that miners' consumption is a forerunner of tuberculosis necessitates that it be treated with the same hygienic precautions as is the latter disease.

The statement concludes that aside from the hygienic supervision of underground working places, the education of the miner against the spread of infection and supervision of miners' children, especially those of consumptive parents, are matters of vital importance.

UTAH MINING MEN BUY BIG BLOCKS OF LIBERTY BONDS

By A. G. MACKENZIE

Salt Lake City, June 20.—Utah mining men and mining companies furnished about \$4,000,000 of the amount subscribed for the Liberty Loan in the State. The State's allotment was six and one-half millions, which was considerably over-subscribed. Among the largest mining subscriptions were the following:

Col. E. A. Wall	\$500,000
Utah Copper Company.....	500,000
American Smelting & Refining Company.....	500,000
W. A. Clark	450,000
Utah Consolidated Mining Com- pany.....	250,000
Employees of the Utah Copper Company.....	205,000
M. Cullen	125,000
Jesse Knight	100,000
J. E. Bamberger	100,000
Utah Fuel Company.....	100,000
Silver King Consolidated Mining Company.....	100,000
International Smelting Company.....	100,000
Employees of Carbon County Coal Mines.....	85,000
Employees of American Smelting & Refining Company.....	65,000
Solon Spiro	50,000
Mrs. Spiro	10,000
Thomas Kearns	50,000
David Keith.....	50,000
Chief Consolidated Mining Com- pany.....	50,000
Samuel McIntyre.....	50,000
U. S. Fuel Company.....	50,000
Silver King Coalition Mines Com- pany.....	25,000
Ernest Bamberger	25,000
John Dern	20,000
Clarence Bamberger.....	10,000

The subscriptions had not been completed at the time this is written. The amounts given in many cases represent only a portion of the total subscription of companies and individuals, as many subscriptions were divided among several States.

LOWERS RATING

In the belief that the insurance rates placed on the mining industry by the new State Industrial Commission under the Workmen's Compensation law were higher than the circumstances required, the Utah Chapter of the American Mining Congress retained Dr. I. M. Rubinow, of New York City, a well-known actuary and a recognized authority on Workmen's Compensation insurance rates, to investigate the situation for the information of the mining men and the Commission.

Dr. Rubinow arrived in Utah, May 27, and devoted two weeks to an investigation of the situation. Accurate mining pay-roll figures were prepared for him and he personally in-

spected the mining conditions, surface and underground, and visited reduction plants. His report, which is an interesting document embodying valuable statistics and calculations, has been filed with the State Industrial Commission and copies have been sent to the mining men of the State for their information.

Dr. Rubinow's investigations and calculations show that the insurance rate on metal mines of Utah should be \$4.25 instead of \$5.59, the rate proposed by the Industrial Commission at the suggestion of the Workmen's Compensation Service Bureau of New York, an organization representing large casualty insurance companies. Dr. Rubinow also found that the rate for Utah coal mines should be \$6.04 instead of \$9, the rate proposed by the Commission.

The Industrial Commission has Dr. Rubinow's report under consideration and a decision on the question is expected within a few days as the new Workmen's Compensation law becomes effective July 1.

RAILROADS ASK COOPERATION OF SHIPPERS AND CONSIGNEES IN MOVE FOR CAR ECONOMY

Howard Elliott, former President of the New York, New Haven and Hartford Railroad, and now a member of the Railroads' War Board, outlines the efforts the War Board is making to arrange for movement of the essentials of life and war, rather than "the things we can get along without in this terrible world crisis."

"The War Board feels," Mr. Elliott said, "that if the war goes on the total amount of transportation now available will not be enough.

"It will be absolutely necessary to use such transportation as there is for essential things. The public should willingly give up the non-essentials. It is going to be a great deal more important for this country to move food, fuel, and iron and the like than to move luxuries. We hope that we are going to be able to move them all but I think it is only fair to point out the facts, and to ask the public's support.

"The railroads have done their best in the last eighteen months to add to their cars and engines. There have been placed in service since November 1, 1916, 989 new engines and 44,063 new cars. Orders have been given for—as of April 1—2,209 engines and 104,917 cars. We hope they will be received between now and the first of next January. If so, there will have been introduced between Nov. 1, 1916, and Jan. 1, 1918, 148,980 cars into the service, with an average capacity of over 50 tons; and 3,188 engines, with an average tractive power of 54,000 pounds, which is very much above the average of the engines of the United States.

"On May 1, there was, according to the record, a 'shortage' of 150,000 cars. In round numbers there are 2,500,000 cars in the United States. If, through better loading by the ship-

per, better unloading by the consignee, better movement by the railroad, and more alert work by every man in the railroads, from the President down to the waterboy, each car is used more efficiently, it will not take long to get what amounts to an added service of 150,000 cars out of the cars on hand.

"The Railroad War Board appeals to railroad officers and employees, to shippers and to the public generally to cooperate in every way to make more efficient use of the existing railway plant. It is absolutely necessary to make every car, engine, track, freight house, and every other appliance do more work.

"One of the first and most important measures the Railroads' War Board has under way is to help move a greater quantity of fuel to the northwest and at the same time bring east the greatest quantity of iron ore possible from the upper lake ports. This will provide for industrial activity both east and west next winter and also insure a supply of domestic coal.

"With the cooperation of the lake carriers, and the ore carriers we have arranged for a pooling of shipments of lake coal so that when coal arrives at lower lake ports, there will be minimum delay in putting it into the boats, thus releasing the cars and sending the boats forward promptly.

"There is very luxurious passenger service in some places in the country and we would like to keep it up, but the country can get along without some of it. We are suggesting changes in the passenger schedules, not with the idea of saving money, but simply to save man power, fuel and motive power, all of which must be applied to the transportation of necessities.

"The Railroad War Board has supplied to the Government five trained railroad officers, who were commissioned to go to Russia to help the Trans-Siberian Railroad to move toward the Russian front the freight piled up at Vladivostok.

"We are arranging to obtain nine regiments of trained railway officers, and employees to help the English and French people carry on railroad activities, principally in France.

"The War Board's organization includes sixteen experienced railway officers, including the five executives, composing the head committee, and eleven others who are here permanently. There are in addition sixty-nine general employees and eighteen inspectors who travel about the country.

"This is an expensive piece of machinery. Our estimate is that, not counting the services of the War Board and the railroad officers who are devoting a very large amount of their time to this national work, the American Railways will contribute the equivalent of about \$500,000 a year to this special work. And we are glad to do it.

"I think we will win this war sooner if first we wake up to the magnitude of the task, and then, not only mobilize our marvelous man power, but also coordinate with that our money power, our business organization, our

press, and all the other manifold industries of these United States, turning all this mobilized and coordinated power to the sole purpose of supporting our allies in maintaining the highest ideals of humanity and civilization.

"That is what the American railways are trying to do through their War Board."

OPERATORS REQUESTED TO AID MINE GARDEN MOVEMENT

In order to stimulate gardening in mining camps, a copy of the following letter was sent on May 31 to all mining companies in the United States by the Bureau of Mines.

"It has come to my attention that certain of the mining companies throughout the United States have officially taken up for their employees, the wives of employees, and children, plans for the growing of vegetables in the yards of the workers and even on vacant land owned by the companies. Some of the companies have even gone to the extent of supplying, either free or at cost, fertilizer and seeds, and also made provision for the plowing of the ground at actual cost. In other instances the companies have offered prizes for the best gardens of \$25 for the first; \$15 for the second; \$10 for the third, and a number of minor prizes, with the result that a great amount of patriotic enthusiasm has been aroused.

"I have been so impressed with the starting of such a movement, modest as it is at the present, that I feel it to be my patriotic duty to urge upon all mining companies, where the conditions are favorable, to start some similar plan that would in the end result in a vast increase in the amount of food products raised during this time of national emergency.

"War today is as much a matter of food supplies as actual fighting in the trenches. The man or woman or child who raises enough vegetables this summer in his garden to feed the family places at the disposal of the men at the front fighting for a world democracy just that much food.

"The growing of these vegetables has also the additional virtue of giving healthful outdoor exercise to the people and for their consumption vegetables which are fresh. Back of all this you are helping to maintain the soldiers and the less fortunate populations of the world that have been thrown out of their natural orderly life by the encroachment of the war upon their properties.

"The Department of Agriculture is enthusiastically in favor of this movement and has prepared for the use of those interested Farmers' Bulletin 255, 'The Home Vegetable Garden,' which will be sent to anyone who makes application. This pamphlet has already proved of valuable assistance to those engaged in making a garden. I take pleasure in sending to you under separate cover a copy of the pamphlet, so that you may see its value in this work.

"It is suggested that those who join this garden movement shall place in their gardens an American flag as a reminder that he who serves his country in that capacity serves the flag."

The movement to plant additional gardens for the purpose of coping with the abnormal conditions as affecting the food supply, was given an impetus in the anthracite coal fields by the operating companies. Hundreds of acres were placed at the disposal of not only employees but of other persons who made requests for plots.

The Philadelphia & Reading Coal & Iron Company in March issued a notice advising all employees to plant any ground over which they had control, offering to allot plots to other employees who would apply for them and promising to cooperate in any helpful way. Hundreds of tracts were assigned to applicants, many of whom were not employees of the company. A graduate of State College was engaged by the company and is being assisted by two practical farmers in directing the work of the amateur farmers. Several hundred leases were executed by the Lehigh & Wilkes-Barre Coal Company for desirable plots in a fine farming district and the Lehigh Valley Coal Company granted leases at the rate of 50 weekly during April and the first half of May for tracts situated in all three regions.

What is practically a community farm is being cultivated by the residents of East-End, a Wilkes-Barre suburb, on a large plot of ground owned by the Delaware & Hudson Company. The Susquehanna Coal Company early in the spring furnished teams and wagons for tenants in preparing their gardens for cultivation and granted the use of vacant land to other employees. The Delaware, Lackawanna & Western Railroad Company, the Pennsylvania Coal Company and the Scranton Coal Company gave the use of suitable land for plots and to cooperate with a civic organization which is interested in the movement. The Lehigh Coal & Navigation Company has offered cash prizes to tenants in several mining towns for the best gardens. The policy of the larger companies has been followed by the smaller operators, wherever they have any land available, as in the instance of the Kingston Coal Company, which plowed under twenty acres of fine land and apportioned it among employees.

Study Flotation at Corvallis

In cooperation with the Oregon Bureau of Mines and Geology, the Bureau of Mines is now carrying on an investigation, under the direction of W. H. Coghill, as regards the effect of flotation oils on surface tension. This work is being done in the laboratories of the Oregon Agricultural College at Corvallis, Oregon, at which institution Mr. Coghill is Professor in Metallurgy.

COAL PRICE FIXING PLAN**PUT INTO EFFECT JULY 1***(Continued from page 236.)*

Knoxville, Tenn.; F. F. Floyd, Knoxville, Tenn.; J. H. Wheelwright, Baltimore, Md.; Sam W. McComb, Harlan, Ky.

Maryland—J. H. Wheelwright, Baltimore, Md.; A. W. Calloway, Baltimore, Md.; Howard Brydon, Piedmont, W. Va.; T. B. Davis, New York City; George Watson, Fairmont, W. Va.; T. M. Dodson, Bethlehem, Pa.; J. S. Brophy, Frostburg, Md.

Ohio—Edwin Jones, Jackson, Ohio; Fred Ebersbaugh, Pomeroy, Ohio; E. M. Poston, Columbus, Ohio; G. C. Weitzel, Columbus, Ohio; S. H. Robbins, Cleveland, Ohio; T. K. Maher, Cleveland, Ohio; C. E. Maurer, Cleveland, Ohio.

Pennsylvania—Rembrandt Peale, New York City; F. H. Wigdon, Philadelphia, Pa.; T. H. Watkins, New York City; James P. Walsh, Pittsburgh, Pa.; J. T. M. Stonerod, Pittsburgh, Pa.; A. R. Hamilton, Pittsburgh, Pa.; J. C. Brydon, Somerset, Pa.

Tennessee—E. C. Mahan, Knoxville, Tenn.; L. C. Crewe, LaFollette, Tenn.; Jno. L. Boyd, Knoxville, Tenn.; J. B. Campbell, Atlanta, Ga.; W. P. Davis, Knoxville, Tenn.; C. M. Moore, Caryville, Tenn.; Jno. E. Patton, Chattanooga, Tenn.

Virginia—C. E. Bockus, New York City; D. D. Hill, Jr., Roanoke, Va.; John L. Kemmer, Philadelphia, Pa.; Otis Mauser, Big Stone Gap, Va.; George L. Carter, Coalwood, W. Va.; Webb Willett, Norton, Va.

West Virginia—C. H. Jenkins, Fairmont, W. Va.; J. H. Wheelwright, Baltimore, Md.; J. R. Thomas, Charleston, W. Va.; T. B. Davis, New York City; W. D. Ord, Landgraaf, W. Va.; R. H. Gross, Boston, Mass.; E. W. Knight, Charleston, W. Va.; D. R. Lawson, secretary, Fairmont, W. Va.

Wisconsin—Peter Reiss (chairman), Sheboygan, Wis.; W. W. Broughton, Minneapolis, Minn.; E. A. Uhrig, Milwaukee, Wis.; E. E. Heiner, Minneapolis, Minn.; J. A. Maher, Minneapolis, Minn.; E. M. Saunders, St. Paul, Minn.; H. E. Smith, St. Paul, Minn.

Anthracite—W. J. Richards, C. F. Huber, W. N. Williams, P. C. Madeira, S. B. Thorne, John Marks, S. T. Peters; additional members, W. N. Truesdale, E. E. Loomus, Joseph Dickson.

Arkansas—J. H. Puterbaugh, McAlester, Okla.; W. P. Hawkins, St. Louis, Mo.; Robert A. Young, Greenwood, Ark.; H. N. Taylor, Kansas City, Mo.; M. M. McWilliams, Spadra, Ark.; W. C. Shank, Kansas City, Mo.; J. R. Barr, Bonanza, Ark.

Iowa—Edward Smith (chairman), Des Moines, Iowa; W. W. Oliver, Centerville, Iowa; W. W. Wilson, Ottumwa, Iowa; Homer H. Harris, Ottumwa, Iowa; Joshua Norwood, Des Moines, Iowa; John Shuler, Des Moines, Iowa; P. H. Hynes, Albia, Iowa.

Kansas—John Mayer (chairman), Kansas City, Mo.; J. F. Flemming, Kansas City, Mo.;

C. P. A. Clough, Kansas City, Mo.; Ira Clemens, Pittsburg, Kans.; Chas. Spencer, Pittsburg, Kans.; L. J. Lawrence, Pittsburg, Kans.; James Ham'ltan, Weir City, Kans.

Missouri—F. W. Lukins (chairman), Kansas City, Mo.; John Bovard, Kansas City, Mo.; H. G. Kellogg, Kansas City, Mo.; I. Pickering, Richmond, Mo.; J. C. McGrew, Jr., Lexington, Mo.; Seth Serat, Kansas City, Mo.; Tom Bowen, Windsor, Mo.

Oklahoma—James Cameron (chairman), Henrietta, Okla.; J. F. Emmert, Kansas City, Mo.; Chas. Price, Henrietta, Okla.; D. J. Gordon, Oklahoma City, Okla.; J. R. Crowe, Jr., Kansas City, Mo.; James Duncan, Alton, Ill.; T. B. Drew, McAlester, Okla.

Texas—W. K. Gordon (chairman), Thurbur, Texas.

An assessment on all operating coal companies of one-quarter of a mill per ton for the support of a national association of coal operators, to have headquarters in Washington, was among important arrangements made at the conference. For some time it has been apparent that there must be a clearing house in Washington for the various coal trade associations. As twenty-five secretaries of the different associations were present in Washington at the price-fixing conference, advantage was taken of the opportunity to get the machinery for such an organization in running order. After preliminary meetings by the secretaries, it was found to be the consensus of opinion that the national association would be helpful to the industry, to the public and more especially to the Government.

The membership of the national association is to consist of State and district associations and bureaus of coal operators who are actively engaged in the production and distribution of coal. The management of the association is to be vested in an executive committee to consist of one member selected by each of the member associations. The executive committee is to select a secretary, council and other necessary employees and fix their salaries, and is empowered to levy such assessments upon a pro rata basis of tonnage as may be necessary for the financial support of the association. The activities outlined for the association are as follows:

Publicity.—Handling such matters as a coal bulletin, prepared daily from telegraphic advices of prices from all coal mining sections and given to the Associated Press for publication throughout the country the following morning; furnishing news bulletins as to prices, production, and all matters of interest to the daily press and to the coal journals, publicity campaigns, etc.

Statistical.—Handling such matters as uniform cost accounting, improved methods, production, etc.; preparing reports to Government departments; obtaining data from various Government departments and compiling for use of members.

Legal.—Handling such matters as Government contracts, uniform contracts with rail-

roads, public utilities, municipalities, etc.; car supply; mine rating; cases before Interstate Commerce Commission and Federal Trade Commission; presentation of matters to Congress and State legislatures; preparation of income tax returns; enforcement of State labor laws, workmen's compensation acts, safety requirements, insurance, etc., and Federal laws; a credit bureau, national in scope, as to coal dealers.

C. P. White, of Cleveland, and C. E. Leshner, statistician of the United States Geological Survey, were named temporary president and secretary of the association.

That all should be smooth sailing in the carrying out of so far-reaching a plan as that set to work at the price-fixing conference was not expected. As a result, there have been and will be some disquieting features and there will be difficult problems to solve. This was evidenced early in the sessions by the uncertainty of the Department of Justice as to giving assurance as to whether it is lawful for producers to meet with Government agents and fix prices. There is no doubt, however, in the mind of Governor Fort, of the Federal Trade Commission, with regard to what the Department of Justice has promised in this regard. He is on record with the following statement in this connection:

"I might say this to you gentlemen, that any arrangement that you make as to the price of coal at the mine with the Federal Trade Commission will not be interdicted by the public authorities. I think we are in a position to state that an agreement with an agency of the Government will not be thought to be contrary to the Sherman law provision against combinations.

"The Attorney General fails to see any reason, in the interest of justice, for the Department of Justice to punish or to attempt to hold parties agreeing with the Federal Trade Commission on prices as criminally guilty of an illegal act. He does not see why the Government should prosecute individuals or corporations for an agreement with a Government agency on fair and equitable prices for the sale of commodities to the Government and all consumers."

The reductions made in prices go into effect July 1 next in the prices of coal. These prices are maximum prices per ton of 2,000 pounds aboard the cars at mine, pending further investigation. These prices do not affect in any way contracts in existence or sales of coal for foreign or export trade.

The operators tendered to the Government a reduction from these reduced prices of 50 cents per ton for coal that the Government may need.

No action was taken upon anthracite prices because of the fact that these prices had already been acted upon by the Federal Trade Commission.

Twenty-five cents per net ton was fixed as the maximum price for coal jobbers' commission, with only one commission, no mat-

ter how many jobbers' hands the coal may pass through.

On account of an inadequate representation of operators west of the Mississippi River, no maximum prices were fixed for coal from those districts. A supplementary statement will be issued within a few days covering prices on coal produced in those districts.

GEOLOGICAL SURVEYS ARRANGE FOR CLOSE COOPERATION

A degree of cooperation never before reached is in effect between the United States Geological Survey and the Surveys of the individual States. This has been brought about in a series of conferences between F. W. DeWolf, president of the State Geologists' Association and W. O. Hotchkiss, the secretary of the same organization, with George Otis Smith, Director of the United States Geological Survey, and with David White, Chief Geologist of the Federal Survey.

While the State surveys have cooperated to a considerable extent with the Federal Bureau heretofore, the work has not been coordinated to the extent that was desired. Under the stress of war conditions, however, it has been possible to achieve in a few days what has been striven for during many years.

The Geological Surveys in the separate States represent in the aggregate a corps of unusually efficient men who are willing to lay aside purely local considerations in order to engage in work which will hold up the hands of the nation in this emergency. The total amount of money appropriated for geological processes by the States also makes a handsome total which will be directed in working out the problems most necessary for the nation's good.

Mr. Hotchkiss, who is the State Geologist of Wisconsin, is also the chairman of the subcommittee on imported mineral materials of the committee on geology of the National Research Council. Other members of his committee are: George M. Kunz, of Tiffany & Company, New York; Joseph Hyde Pratt, State Geologist of North Carolina; David White, of the Geological Survey, and Charles L. Parsons, Chief of the Division of Mining Technology, of the United States Bureau of Mines. Manganese and pyrite are to receive the chief attention of Mr. Hotchkiss' committee. Its activities, however, will not end with the work to be done on these important imported materials, but will extend to tungsten, mica, graphite, glass sands and other materials now in national demand on account of the war.

Colorado Report Out

With the usual care which characterizes reports issued by the State of Colorado, the fourteenth biennial report of the Bureau of Mines just has been issued. Commissioner Carroll has written his report in a very readable manner. His chapter on custom smelting and milling is especially interesting.

ACTIVE WORK IN PROGRESS ON TIN PROPERTIES IN U. S.

While increases are being made in the domestic production of tin, the development of tin properties, which is proceeding rapidly, gives no indication that any large production may be expected. In view of the fact that any domestic production relieves, to just that extent, the strain on shipping the United States Geological Survey is engaged in an active effort to furnish the operators of tin mines in this country all possible advice. H. G. Ferguson, one of the Survey's geologists, has just returned from the personal inspection of the tin bearing deposits of Virginia and of North and South Carolina. His observation convinces him that the opportunity of operating profitably in the hard rock is small. He is of the opinion, however, that considerable tin production will result from the handling of decomposed outcrops of the pegmatite dykes and in the residual placers.

There are geological reasons to indicate possible important disclosures in the development of the likely-looking deposits near the headwaters of the Irish Creek in the Rock Bridge section of Virginia. Assays that have been made of the samples collected in this region show a high percentage of tin and considerable interest is being manifested in the outcome of development work.

MINE RESCUE CARS UTILIZED IN EDUCATIONAL CAMPAIGN

For the purpose of assigning definite territory to its mine rescue cars, the Bureau of Mines has divided the United States into nine districts. The headquarters of each district is selected with relation to the mining districts so as to make possible the dispatch of a rescue car in the shortest possible time.

With the experience of the past several years, the Bureau has found that its rescue cars can be put to almost constant use rather than utilizing them only in case of accident. The cars now are kept in motion much of the time. With its expert personnel, the car becomes a disseminator of educational information which is being spoken of highly by operators and men alike in the districts where this work has been in progress. The rear of the car is frequently used as a platform from which to address public gatherings in mining camps. As the car is equipped with motion picture machines and stereopticons which aid materially to the interest in the addresses, these lectures have been found to be very useful in bettering mining practices in regard to safety and conservation. On visiting a mining camp the members of the car's personnel offer their services in an advisory capacity with regard to matters pertaining to the general welfare of operators and workmen alike.

Each of the three new rescue cars are identical in construction. The floor plan consists of:

(a) Demonstration room in which is stored all of the oxygen mine rescue apparatus, first-aid materials and accessories.

(b) A corridor leading along one side of the car from the demonstration room to the rear end.

(c) The first compartment off the corridor is the foreman's stateroom which has berths and lockers for four men.

(d) The second compartment is the bathroom, provided with toilet and bathing facilities, including a shower bath.

(e) A third compartment is the engineer's office, in which are two desks, bookcases, and berths and lockers for three men.

(f) A fourth compartment consists of a dining room provided with linen closet, center table and chairs, etc. In one corner of the dining room there is a typewriter desk which the clerk will make his office.

(g) A fifth compartment consists of the cook's stateroom and separate toilet.

(h) The sixth compartment is fitted up as an up-to-date car kitchen with range, ice chest, lockers, etc., and the regulation funnel arrangement and exhaust fan in the roof for ventilation purposes. A double-coil Baker heater system is located in the kitchen end of the car.

The Reno car, which will be known as Car No. 1, and which will make its headquarters on the University of Nevada campus at Reno, Nev., is manned by the following crew:

Edward Steidle, mining engineer,

J. V. Berry, foreman miner,

Walter F. Pyne, first-aid miner,

D. W. Cooke, clerk, and a cook.

The personnel of Car No. 2, with headquarters at Raton, N. Mex., is as follows:

C. A. Herbert, mining engineer,

K. H. Chisholm, foreman miner,

Jas. Dalrymple, Jr., first-aid miner.

A. F. Goldbloom, clerk.

The personnel of Car No. 5, to be located at Butte, Mont., is as follows:

C. A. Allen, mining engineer,

J. J. Forbes, foreman miner,

S. C. Dickinson, first-aid miner,

S. S. Blum, clerk.

In addition to the above, a mine surgeon will be detailed for duty on each of these cars for the Public Health Service.

CRANBERRY CREEK COAL CO. TAKES OVER HAZELTON COLLIERY

The Cranberry Colliery at Hazleton, acquired from A. Pardee & Company by the Lehigh Coal & Navigation Company on July 1, 1916, has been transferred to the Cranberry Creek Coal Company and will in future be operated by that company.

The operating officers of the Cranberry Creek Coal Company are as follows: Edwin Ludlow, president, Lansford, Pa.; H. M. Crankshaw, Manager, Hazleton, Pa.; E. Hughes, Purchasing Agent, 437 Chestnut St., Philadelphia, Pa.

NAVY GETS BATTLESHIP COAL AT \$2.33½ PENDING COST PROBE

Pending an investigation as to the cost of production, the Navy will be furnished coal at a price of \$2.33½. A tentative arrangement to that effect was brought about after numerous conferences between Navy Department officials, the Committee on Coal Production and various operators. The operators offered to furnish the Navy's requirements, which are approximately 1,800,000 tons, at \$2.95. Secretary Daniels held that this price is too high. His coal specialists advised him that the cost of production averages \$1.72 a ton. Prominent operators were called upon to show that this calculation is erroneous. After numerous meetings, neither side was able to establish its contention to the satisfaction of the other and the operators decided to comply with a suggestion by Secretary Daniels that the difference between the two prices be split and that the Federal Trade Commission undertake an immediate investigation as to the cost of production. Once the cost of production is established, all coal furnished is to be paid for on a cost-plus basis.

The following letter with regard to the matter was sent the coal operators by the Secretary of the Navy:

"Effective at once, please be prepared to furnish your proportion of the total quantity of coal required by the Navy, for the period ending September 30, 1917.

"The coal furnished will be from mines now on the Navy Acceptable List.

"The price to be paid for such tonnage as you may be required to deliver is to be determined later, and, as the result of this Department's decision as communicated to the Committee on Coal Production, Council of National Defense, will be contingent on the cost of production, data concerning which is now being prepared. As an advance payment, however, this Department will allow the unit of \$2.335 per gross ton, F.O.B. mines, although it is to be understood that any payments made at this rate will be subject to such increases or decreases as may be later decided upon as proper by reason of the ultimate decision with respect to cost of production, plus such reasonable profit as may be allowed.

"It will also be understood that the figure finally agreed upon as a proper amount to be paid your company will be subject to such increase or decrease in transportation or labor costs as may be exacted of you during the period of the formal contract.

"In making the allotments described herein every effort has been made to treat all suppliers equitably, consideration being given to the questions of productions, convenience of transportation and other governing factors. However, in view of the inability to reach a definite agreement as a result of the several conferences held on this subject, it has not been practical to, as yet, investigate as thoroughly as might be desired, so that, if it is found a possible injustice has been done to any supplier, upon receipt of

satisfactory evidence bearing out such contention, steps will be taken to remedy same in subsequent allotments in the best interests of all concerned.

"It is probable that deliveries under this order may be required in the immediate future and you will, therefore, make all necessary preparations to meet such deliveries as may be called for, on which it may be necessary to make telegraphic assignments."

HOPES TO HAVE USE FOR MORE ACID AFTER THE WAR

Care is being taken by the Bureau of Mines in its numerous activities looking to the encouragement of domestic production of minerals and related products to look at the matter from a business-like standpoint. When considerable risk is entailed, every effort is made to call attention to the fact that present high prices may be temporary. This is illustrated by the sulphuric acid situation. Acid plants can be constructed only at great cost and the probabilities indicate that the present price of acid will be limited to the duration of the war. While every effort is made to point out the advantages of saving sulphuric acid at smelting plants, attention is also called to the possibilities of over production after the war.

Since it is very desirable to recover all by-products possible from smelting operations, efforts are being made looking to the profitable use of the sulphuric acid in new lines of industrial endeavor, such as in the treating of phosphate rock.

BUREAU OF MINES SUCCESSFUL IN FLOTATION EXPERIMENTS

Marked success has followed the experiments at the Salt Lake City station of the Bureau of Mines in flotation oils. This is especially true of the various oils obtained from the destructive distillation of hardwoods. The creosotes also have been found to be acceptable flotation oils. Pyroligneous acids from resinous wood distillates have been demonstrated to possess little value in flotation work.

ALL GEOLOGISTS IN THE U. S. TO BE LISTED AND CLASSIFIED

It is the hope of the United States Geological Survey to list every geologist in the country. A census of the geological profession is now being taken. As the returns are received the geologists are being classified under their different specialties. All information necessary to secure a comprehensive idea of the experience and class of work the geologist is best equipped to handle will be so arranged that it can be referred to immediately. It is anticipated that it will be necessary to call upon many geologists for important cooperation in the existing emergency,

WARRINER SAYS ANTHRACITE POOL WILL HELP NEW ENGLAND

A concrete explanation of several interesting features of the anthracite situation was made by S. V. Warriner, of Philadelphia. He said:

"You are all very vitally interested in the domestic fuel supply for New England this year, and I want to assure you that in behalf of the anthracite producing and transporting interests, the matter is having our very earnest consideration.

"There are perhaps two factors that have led to the shortage of anthracite, if there really be a shortage of anthracite, all over the country, and the major factor in connection with that has been that the consumption of domestic coal has considerably increased. That is not an abnormal situation, in that it always increases when the times are prosperous. People do burn more coal. They are not so careful about screening out their ashes, and the resultant is that everybody uses more than he does under normal business conditions.

"The second reason is—and to what extent it affects New England we do not know, as it is a very difficult thing to tell—as you will recall, last year at this time, or perhaps a month later, the market was very flat; people could not be induced to buy coal at that time, and there was more or less restriction on the part of the producing companies, and the active demand did not come until September or October. This year the very opposite is the fact, and people who never have stored coal before are now storing coal for a year or a year and a half supply in their bins, and getting it if they can only get it in 1-ton lots from the dealers, and if they want 8 or 10 tons, they go to eight or ten dealers, and that complicates the situation, and makes this situation, so far as the retail dealer is concerned, a very embarrassing one, because it increases their cost of delivery.

"The production of anthracite coal, so far this year, is ahead of what it was last year. For the month of May the anthracite companies produced 6,917,000 tons, withing a few hundred tons of the largest production in the history of the anthracite trade.

"So far as the amount of coal going into New England is concerned, taking it as a whole, the situation there is almost normal. That is, so far this year it compares, within a very few tons, with the normal transportation moved into New England for this period of the year. But still New England is out of coal, there is no doubt about it, and it is especially so along certain lines, certain parts of New England, as far as we can find out. Some parts of New England apparently are very well taken care of; other parts of New England are dry as a bone. It is especially true along the Sound, and along the coast, in the northern part of New England, and also it is true of the small local towns in the interior, especially in the northern part. I think that so far as the situation of our interior New Haven points is concerned—towns like Springfield, Hartford

and others—they are fairly well taken care of, and a great many of the dealers have considerable coal on hand. There are two things which have, to a certain extent, interfered with that, which we are aiming to correct, and in spite of the fact that the New England householder is endeavoring to get enough coal into his bin for a year or a year and a half or two years, we expect, unless the situation radically changes, to have all the coal in New England that New England people under normal conditions will actually need. Whether or not it can be distributed properly is a different question.

"We have been a great deal concerned in regard to the barge deliveries at the start, due to the Government regulations. Those Government regulations have now been very largely removed, both as to restrictions in movement and restrictions as to the personnel of the crew on the tugs and barges. So that the Government has helped us in that particular.

"The other restriction has been due to the difficulty of forcing a sufficient amount of coal through the various gate-ways, all-rail, into New England, and that has been especially marked on the Boston and Maine R. R. The anthracite companies could have and would have shipped more coal into that New England territory if it had not been for those very serious restrictions occurring from time to time, both arising out of embargoes placed by the New England roads, due to congestion on their own lines, and embargoes placed by the anthracite roads due to the number of cars that accumulated from time to time on the New England roads. But in behalf of the anthracite committee we have now reached a working agreement with Mr. Starrow's committee, representing New England, and expect to have a conference with the presidents of the various New England railroads to see whether or not that cannot be speeded up. So far as our own company is concerned, we have shipped more than 50 per cent; by 50 per cent we have increased our shipments into New England all-rail over previous years, our shipments all going through the Poughkeepsie gate-way.

"In order to expedite the matter still further, we are now arranging a pooling system; that is, provided it will have the sanction of the Department of Justice and the Trade Commission, which I have no doubt it will, at least so far as the Trade Commission is concerned, under which there will be a director of transportation on each one of the company docks. The anthracite situation, as you understand, is a very different one from the bituminous. Bituminous coal is rather gathered from small mines and delivered into large storage yards. The anthracite tonnage is handled almost exclusively by the large railroad companies—that is, so far as the barge coal is concerned—only about 8 per cent of individual company coal going north of Cape Cod. But it is delivered to a multitude of comparatively small dealers. There are comparatively few large storage yards in New England, and that is one thing that New England has to correct for herself. She has to have

larger storage facilities, better distributing places. Up there there are a great many places where we are still limited, as regards the size of the cars, as regards the storage facilities, and delays in transportation at this time make the details of distribution a very difficult matter.

"But we are now starting a pooling system, under which the coal going over each of the initial lines' docks will be pooled under the supervision of a director. That is, each dock will represent a pool by itself. The company coal does not require to be pooled, but the individual coal, in so far as we can direct it up to New England, will be pooled so as to speed up transportation and eliminate delays.

"So that I feel assured that while the situation has been critical, and while the hurdles are not all jumped yet by any means, providing we can devise some way by which anthracite coal in larger quantities can go by the all-rail routes, we will not allow New England to suffer.

"I feel that, so far as the water-borne coal is concerned, from now on there will be a decided increase in the amount of coal going by water, and that it will simply be governed by barge capacity there. But that so far as all-rail is concerned, it is going to be limited by the capacities of the roads taking it through the various gateways.

"The western market and the southern market are to a very large extent getting already pretty well filled up, and the anthracite roads, I believe, are ready and willing to send into New England just as much as New England possibly can take. There is the situation, as I see it, in a nutshell. I should be very glad to answer any questions."

GOVERNMENT BEGINS COAL MINING OPERATIONS IN ALASKA

Under the direction of the Secretary of the Interior, the Government is beginning coal mining operations in Alaska. The work is under the immediate direction of Herbert A. Meyer, assistant to the Secretary of the Interior. The necessity of relieving ocean tonnage of the burden of transporting coal for Alaska from Seattle is the chief reason which called for this activity on the part of the Government. As the work on the Alaskan railroad progresses, it is becoming more and more necessary to have the nearby coals developed and made available for use. The increasing demand for coal for domestic use and the desirability of reducing its cost to the lowest possible point is another factor which entered largely into the decision to begin mining operations.

Operating under a Government lease, William Martin opened a very promising coal property near Anchorage. The coal was of good quality and was being produced in increasing amounts. This led the Alaskan Railway Commission to enter into a contract with Mr. Martin for coal. Shortly after the execution of this contract a fault was encountered in the mine and it became impossible for Mr. Martin to comply with the

terms of the contract. He did not have sufficient capital to undertake the expensive operations necessary to locate his vein. In view of this fact the Alaskan Engineering Commission subleased the property from Mr. Martin. George Watkin Evans is now in Seattle purchasing machinery and supplies and securing the services of the miners to continue the operation of this property.

Another mine will be operated on tract No. 12 of the Matanuska coal field. Mining operations on a considerable scale will be undertaken at this point. The railroad has not been completed to the point where the mine will be opened but it is hoped to have some coal ready for use by the time the rails reach that point. It was from tract 12 that the coal was obtained which tested out so successfully under an examination conducted several years ago by vessels of the Navy.

Every effort is being made by the Alaskan Commission and the Department of Interior to encourage private mining operations in the hope of ending imports of coal at the earliest possible date.

GOVERNMENT BUYS TANANA RAILROAD—SOLVES FUEL PROBLEM

Purchase by the government of the Tanana Valley Railroad, in Alaska, has been announced by Secretary Lane. This road runs from Fairbanks to Chatanika, with a branch to Chena, and traverses a country of agricultural and mineral wealth. This road will become a part of the Government railroad system now under construction in Alaska, the main line of which runs from Seward to Fairbanks, and will make available for mining operations in the Fairbanks district the coal in the Nenana field about 100 miles south of Fairbanks and adjacent to the main line.

Recommended for Fellowships

Lewis G. Gerhardt, E. Harvey Miller, M. H. Smith, R. G. Hinman and Fred Sutter, have been recommended by the University of Utah for fellowships in Metallurgy. These fellowships are made possible by the cooperation of the Salt Lake City station of the Bureau of Mines. Those designated for fellowships are permitted to assist in working out the metallurgical problems on which the Bureau of Mines is working. They receive a nominal salary for the work done.

BUREAU OF MINES MAKES HIGH RECOVERIES OF POTASH

By converting insoluble potash into a soluble form of the mineral and by breaking down certain silicates, the Salt Lake City station of the Bureau of Mines is making high recoveries of potash in the course of extensive experiments along this line.

TIDEWATER COAL EXCHANGE BEGINS WORK IN WASHINGTON

In the organization of the Tidewater Exchange the Railroad Committee recommended as follows:

First: That there will be appointed an Exchange Commissioner, located at Washington, D. C.

Second: A Deputy Commissioner at each port.

- (a) Norfolk.
- (b) Baltimore.
- (c) Philadelphia.
- (d) New York.

Third: A Pier Superintendent or Shipping Agent at each port to report to Deputy Commissioner for that port.

We suggest a Legal Committee, as follows:

W. S. Bronson, Commerce Counsel, Chesapeake & Ohio Ry., Richmond, Va.; W. L. Kenter, Assistant General Solicitor, Philadelphia & Reading Ry., Philadelphia, Pa.; Geo. P. Bagby, General Attorney, Western Maryland R. R., Baltimore, Md.

We recommend for a permanent Auditing Committee, as follows:

L. A. Lambert, Auditor Coal and Coke Receipts, B. & O. R. R., Chairman; F. E. Briggs, Auditor Freight Accounts, N. Y. C. Lines; T. S. Neale, Auditor Coal Traffic, Philadelphia & Reading Ry.; P. L. Overman, Auditor Freight and Passenger Account, Western Maryland R. R.; W. C. Everett, Auditor, Virginian Ry.

The recommendations of the railroad committee were carried out, and Rembrandt Peele, of New York, was named commissioner.

MORROW URGES OPERATORS TO SEND IN WEEKLY REPORTS

In connection with the movement to secure weekly reports of production, J. D. A. Morrow, the Commissioner of the Pittsburgh Coal Producers' Association, sent out the following letter to the operators in the Pittsburgh district:

"Accompanying this letter you are receiving a communication from the United States Geological Survey. It asks you to report weekly statements of your coal production, car rating and shipments to the Pittsburgh Coal Producers' Association. It also explains clearly the reasons for that request and the need of your unreserved and patriotic response thereto.

"This Association will combine the reports from the individual operators into consolidated statements for each field as a means of assisting the United States Geological Survey and the Committee on Coal Production and will send copies of these statements each week to these agencies of the Government. *Copies will also be sent promptly to each operator reporting.*

"Your reports to the Association will be held strictly confidential and will not be disclosed to any member or officer of the Association or to any one else. In that respect you will be treated precisely as if you were a member.

"Under separate cover cards are being sent you on which you are to make your reports.

These cards should be mailed to the Pittsburgh Coal Producers' Association, 323 Farmers' Bank Building, Pittsburgh.

"You will materially assist this Association and the authorities in Washington, if you will observe the instructions on the cards and the following suggestions, in making your report.

"1. Reports are to be made for calendar weeks, but in beginning, please send production and car supply reports for June 1 and 2 and thereafter for each week. This will enable us to begin our statistics with June 1.

"2. Kindly mail your reports so as to reach this office on Tuesday of each week at the latest.

"3. With your first reports, please inform us:

(a) To whom and at what address we shall mail you our consolidated reports.

(b) By whom your reports will be made out, with this employee's office address and telephone number.

"4. We will be glad to have you drop into the Association offices at your first opportunity so that we may become acquainted and so that you may satisfy yourself as to the manner in which this work is being handled."

NEW WORK OUT ON PURCHASE OF SUPPLIES FOR THE MINE

Special importance is attached to the publication of a reference work on the purchase and utilization of mine supplies by Herbert N. Stronck and John R. Billiard. These men are mining engineers of national reputation. Their book is the first formal work ever published on this important subject. It was prepared at the request of a number of the leading mine operators of the country. Owing to the ever-increasing cost of mine supplies, the subject matter is of special importance at this time. Mr. Stronck has long been a member of the American Mining Congress.

LOSE EXPERTS AS PRIVATE EMPLOYERS BOOST SALARIES

With the continued demand from private employers, the geological staffs of the United States Geological Survey and of the State Surveys are suffering to considerable degree. Attracted by salaries varying from two to four times those paid by the Government and by the advantages offered by long time contracts and promises of advancement, some of the most needed men in the employ of the Government are leaving. The attitude of Congress is distinctly hostile to any material increase in the salaries of the technical staff. Before the seriousness of the situation can be brought home to those who hold the purse strings, it is feared that much valuable aid, which could be given by the government, will have been rendered impossible. The situation takes on a more serious aspect at present from the fact that the Government scientific Bureaus are being called upon for a vast amount of information looking to the successful prosecution of the war.

CALIFORNIA MINERALS TO BE SUBJECT OF SPECIAL STUDY

The California Mining Bureau under the direction of Fletcher Hamilton, state mineralogist, is starting a field campaign to report on the economic minerals of California, which have an important industrial and military bearing on the present war situation. For the past four years the bureau has been working on a complete survey of the entire state's mineral resources by counties, field work for which is now practically completed and the results in part published. Particular interest and value attaches at the present moment to available supplies of chrome, coal, iron, magnesite, manganese, molybdenum, quicksilver and tungsten.

The extent and availability of petroleum resources, which are so important in modern naval operations, have already been thoroughly covered by the bureau in its work of protecting the fields from damage by faulty operations. As data on the other minerals are already well in hand, trained geologists and engineers of the bureau's staff are being sent out to bring the information down-to-the-minute with relation to the latest developments in the above-named items. The report will cover the location, size, accessibility to transportation, character, quality, and state of development of every known deposit throughout the entire state.

W. Burling Tucker, chief field assistant, will visit the counties south of the Tehachapi Clarence A. Waring, field assistant, the counties along the Sierra Nevada Mountains from Tulare northward; Emile Huguenin, field assistant, the counties along the coast ranges from Monterey to Del Norte; Walter W. Bradley, mining statistician, Siskiyou and Shasta Counties; also quicksilver and research work on the metallurgy of quicksilver.

With the exception of a small tonnage of chrome from Oregon in 1916, and of magnesite from Washington in 1917, California has been the sole source of these two minerals in the United States. For many years California has been, and still is, producing from 70 to 80 per cent of the quicksilver yield of the United States. This metal is absolutely essential from a military standpoint, as there has not yet been produced a commercial substitute for it in the manufacture of fulminating caps for explosives. California is one of the two main producing tungsten states of the Union. This metal is especially valuable in the manufacture of alloys for high-grade tool steels.

Shippers' Guide Issued

An industrial and shippers' guide, issued by the Norfolk and Western Railroad Company is a publication of unusual merit for this type of work. While it is paper bound, it is splendidly printed, contains maps and

photographs which accent graphically many of the features of the publication. It was compiled by the agricultural and industrial department of the railroad at Roanoke, Va.

COAL COMPANY INTERESTS WORKING BOYS IN SCHOOL

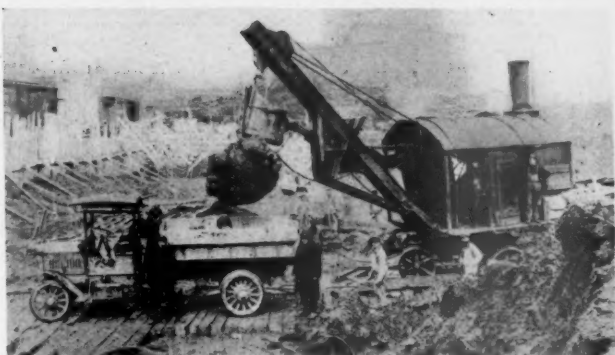
The problem of interesting working boys in education is being worked out with gratifying results by the Lehigh Valley Coal Company in its shops at Drifton, Pa., where a school is conducted in the interest of apprentices. It is difficult to determine whether the boys better enjoy the school or the shops, so well does the work of each supplement the other. About thirty boys are the beneficiaries of this plan, which is under the sympathetic direction of the superintendent, Mr. Johnston Campbell.

The pupils are paid for the time spent in the school, as its sessions are held during shop hours. There are two classes, membership in each being determined by the length of service in the shops. The younger boys are in charge of one of the general office force, and the more advanced class is taught by the chief draftsman. The boys are given thorough drills in penmanship, free-hand drawing from models, mathematics, and in spelling, with special attention to mechanical terms. Each class devotes one hour during the week to school work.

Practical shop problems are selected for frequent contests, and prizes of cash, standard works on mechanics, or shop privileges are awarded. A wide range of subjects is covered in the papers prepared by the pupils. An evidence of the close application of the apprentices to their studies and their work is seen in the exacting requirements of a recent contest, when they were asked to name all the parts in the machinery recently built in the shops for the new Drifton breaker. Other problems of a similar character are often given them, and occasionally they submit free-hand drawings of machinery with parts labeled. Some of the boys show marked proficiency. Recently one of them won a prize in a contest conducted by a technical journal.

The management also encourages the attendance of the boys at the night classes in the Mining and Mechanical Institute at Free-land, where they may enter the model training school and drawing classes. Their record at night school is kept and is credited to them. Those who attend regularly and show progress may have the date on which their rate of pay is changed advanced from one to three months.

W. C. Phalen, who recently joined the division of mining technology of the Bureau of Mines, has begun work on a special treatise on salt. Later he will have a similar report on manganese.



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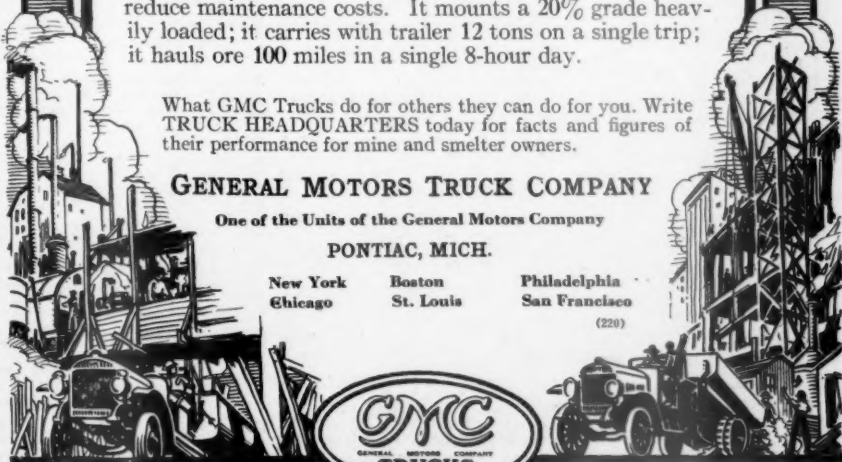
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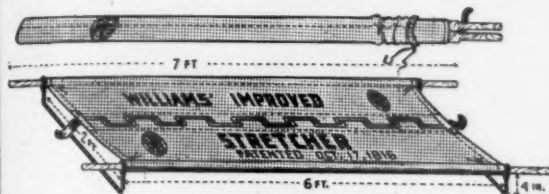
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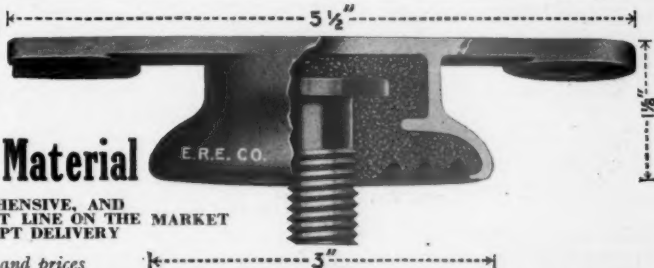
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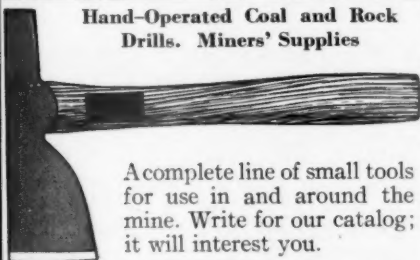
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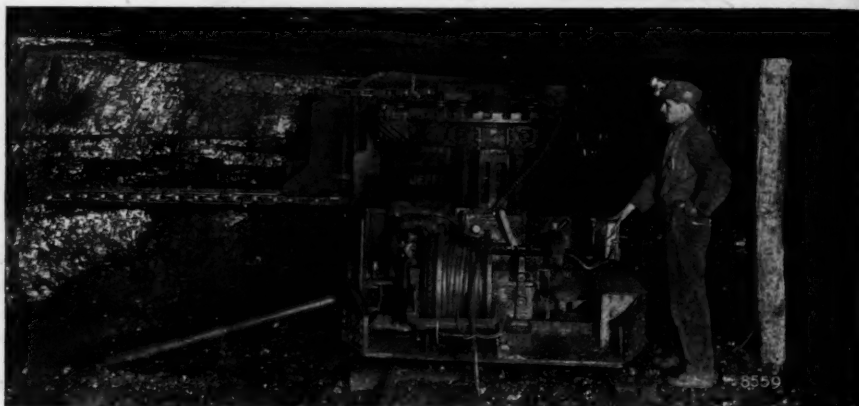
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- 2 **Cuts at any place in the coal seam**; either close to the bottom, close to the top, or anywhere in between.
- 3 **Dirt seams can be cut out**, insuring cleaner coal for the consumer.
- 4 **Truck is provided with two gear reductions.** The fast one is used for traveling from place to place, the slow one for feeding machine into the coal, and for sumping cutter-bar in most cases.
- 5 **Does not require a pulling jack** to pull across the face, as machine is fed by means of its own mechanism, which saves considerable time over other methods.
- 6 **Adjustable**—if height of dirt seams vary, cutter-bar can be placed accordingly.
- 7 **The Cutter-Bar and machine proper** have three-point suspension, so that the cutter-bar can be directed as desired.
- 8 **Cutter-Bar is indestructible.** Made of forgings and rolled steel—provided with hardened renewable liners.
- 9 **Cutter Chain** made of drop forgings—not steel castings, and is hardened.
- 10 **Feed Drum** is provided with a **disc clutch** which aids as a safety slip, and at the same time affords practical means for releasing the strain on the feed rope.

The Jeffrey Arcwall **seldom** requires any repairs and these can be **quickly** made. The saving is obvious.

Machine Operators prefer the Arcwall because it will make more money for them, and requires less labor to handle—easier for the mine operator to secure and retain workmen.

Bulletin No. 191-58 fully explains the features of the machine, which insures More and Better Coal at Less Cost. Shall we send you a free copy?

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